



Unable to escape from Leeds Polytechnic even after retiring from his directorship, I celebrated my release by taking an active part in Dialogue in the Brunswick School of the Environment and was presented at the end of my efforts with a large bottle of Grouse, the students being under the eccentric impression that there is nothing I like more than whisky. There is a certain amount of evidence for that, but the gesture was unexpected and moving.

The fact is that Dialogue is a unique event in Leeds, which could well be emulated by other places of higher education. It was inaugurated (with my help) by a highly articulate and argumentative member of staff in the school of architecture who is now head of the school of architecture in Leicester Polytechnic. The essence of the event is that we hand over the school to the students for a week, cancelling all ordinary lectures and providing them (with the help of the union) with a small amount of money to bring in whoever they want to lecture and argue and perform and display.

What is particularly fascinating is that architecture students find that kind of affair easy to understand (it is difficult to organize), landscape students take to it like ducks to water (an appropriate image), town planning students cannot understand it but occasionally take a detached and tolerant view of its absurdities, and students of building are at a total loss. I think the rationale goes like this.

Architects live in studios, attend lectures as rarely as possible but always want to hear their current heroes showing slides of their work no matter what gobbledygook they talk at the same time; landscapers decorate their workshops and festoon them with dripping foliage but like to peer out from time to time to hear how the world is getting on; bulldozers get furiously unhappy unless they are sitting in rows listening to lectures at appointed times and following an agreed curriculum; relaxing to talk about women and beer. As for myself, I try every year to persuade the student organizers to treat the Dialogue as a kind of cafeteria of events, to which you may come and go. I think they feel happier if there is some structure about it.

This year's Dialogue was devoted to *Living Spaces*, which enabled visiting lecturers to talk about anything they liked, which usually means themselves. There was a brilliant lecture by a sculptor who arranged leaves and twigs and dais holes and gets into them so that only his head is showing, and an even more brilliant lecture about garden festivals by the co-ordinating designer of the Liverpool festival, a well informed and irreconcilable debate about energy between a member of the CEBG and the Friends of the Earth, and a long discussion (chaired by me) between four architects trying to decide where we go now. Not surprisingly, we decided to pursue the subject later rather than agree in a hurry.

Patrick Nuttgens



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Letters to the editor

Safeguarding Scotland's future

Sir, — In his letter on the STEAC report on the future of higher education in Scotland (*THES*, January 24) Mr W. A. Wilson rightly draws attention to a number of difficult and important problems. He makes, additionally, the sensible proposal that the advisory subcommittees to the proposed funding and planning body should meet in Paisley, presumably at this college, Paisley College of Technology.

Committee members might appreciate the college facilities and the opportunity to see at first hand the workings of a thriving technological central institution funded directly by the Scottish Education Department (a Scottish funding and planning body) and devoted almost entirely to degree and postgraduate level work in engineering, the sciences and other vocational subjects such as economics and management. In particular they could discuss with college staff who are members of Science and Engineering Research Council boards how it is that

much SERC-funded research and postgraduate training, including teaching companies and an integrated graduate development scheme, is done at Paisley without that access to the research component of the UGC recurrent grant so valued by the universities.

I raise this point since a recurring criticism of the STEAC report is that consequence of a Scottish funding body would be exclusion of the universities from external funding from, for example, the research councils. There is no necessity for this to be so and the report lays out proposals (para 8.24 et seq) for safeguarding such funding.

No one can deny that implementation of even part of the STEAC recommendations would require much consultation and place and time. But the report is essentially optimistic and forward looking in sharp contrast to the Green Paper on higher education in the 1990s. This is clear from the recommendations on student numbers, student grants, the Scottish de-

gree structure, staff salaries and development, improvements in schools, and the distinct roles allocated to the university, and public sectors. Also it should be remembered that the cuts and selectivity in UGC research funding, so deplored by Mr Wilson, originated not with the STEAC report but in the Green Paper.

Scotland has a distinctive school structure with a matching structure in higher education. In many ways Scottish higher education has flexibility ideally suited to modern conditions and clearly attractive to students from outside Scotland. But these qualities can only be exploited fully if there is willingness to consider reasonable changes. No one today can be unaware of the consequences of failure to adapt to changing circumstances.

Yours faithfully,
L.W. BARR,
Department of Physics,
Paisley College of Technology.

Plight facing poor students

Sir, — I am writing to draw attention to the Association for Student Councils' deep concern about the impact of the cuts on student grants, and the parallel proposals contained in the Government's White Paper on social security.

In my opinion the announced 12 per cent increase will not even mitigate the present rate of inflation. In addition, this new plan for student grants envisages an increase in the rate of parental contribution. Because this contribution is recommended rather than obligatory the ASC is concerned about the effects such legislation will have on students.

Even now many students are constantly overdrawn with their bank Research carried out by the National Union of Students some years ago revealed that a very considerable percentage of parents did not contribute the amounts then recommended a parental contribution to their offspring's grants. Given that the rates for 1986/87 envisage a larger parental contribution, we in this association can only anticipate that many more students are going to have to face serious financial hardships.

In response to this new legislation, many students will have to subsidize their grants through part-time work. Though this has often been the practice, nevertheless many more students will have been able to choose which vocations or evenings they have been able to work allowing for appropriate study requirements. The fear we now have is that students, in larger number will be seeking work through sheer necessity, simply to survive. Clearly this will not aid either their educational or their social development.

In the current period of high unemployment the specific sorts of part-time work that students will pursue will be attractive to unemployed people or families on low incomes.

In addition to the above situation the Government has published a White Paper on social security. The White Paper proposals exclude students from social security benefits, effectively leaving a year's wages of about £1,500 a year worse off. This is a very significant loss of income for many students, particularly those who are unemployed during the long vacations.

In summation, these two pieces of legislation represent a powerful and not only upon the living standards of students generally but also upon the structure of higher education that has been historically egalitarian in nature.

One may certainly anticipate in the near future:

- fewer applications from otherwise talented young people who (their selves and their parents) will not be able to afford higher education;
- higher drop-out rates;
- an increase in ill health both physically and psychologically among students;
- a decrease in standard of academic performances.

On behalf of this association, I wish to register our considerable concern and bitter disappointment with both the above mentioned pieces of legislation.

Yours faithfully,
COLIN LAGO,
Association for Student Councils
Leicester Polytechnic.

Letters for publication should arrive Tuesday morning. They should be as short as possible and written on one side of the paper. The editor reserves the right to cut or amend them if necessary.

Health prospect

Sir, — In your January 10 issue you reported that the Secretary of State for Scotland has approved the college's proposals to develop the properties mainly owned by the college on an adjacent site. As you indicated, the college is extending its involvement with health care courses.

However, your report left the reader with the impression the college only offers dietetics and physiotherapy. In fact, the college now has orthotics and with the new extension, the plans are that occupational therapy, radiography (therapeutic), radiography (diagnostic) and chiropody will become part of the college. Equally important, however, are the degree, diploma and postgraduate programmes in hotel catering, home economics, consumer studies and social work.

Yours sincerely,
G.A. RICHARDSON,
Principal,
The Queen's College, Glasgow.

Lack of tenure

Sir, — Resistance to the Government's move to abolish tenure seems to have collapsed, even in your own editorial columns. Two features of the discussion strike me as odd at this distance: first, there seems to have been no rallying round some weaker and more defensible form of tenure, such as the American system that is partly subsumed as the traditional British version but much harder to get, or even further down the line, the Swiss system of 10 year renewable contracts for professors. Such arrangements are proof against the simpler-minded criticisms of the British system.

Second, it surprises me that the argument has not been advanced in your columns that the abolition of tenure, as at present proposed, will maintain and perhaps accelerate the renewed British brain drain to the US. One good argument for staying in Britain was always the firmness of tenure, as compared with the risk of not getting it in the US. Perhaps, like the early retirement scheme, Government policy will again root out the very people it should least want to.

Yours sincerely,
YORICK WILKS,
Director, Computing research laboratory,
New Mexico State University.

Robbins enriched

Sir, — Your leader of January 31 deplores the fact that the Green Paper did not address itself to producing clear principles on the purposes of higher education for the last years of the 20th century, so rewriting the Robbins principles.

The Engineering Council in its response to the Green Paper (which by the way it generally supports) did actually try to provide such an update and to be rather more specific than, as you say, the insipid generalities of

Robbins. The Engineering Council's principles expressing the purposes of higher education are that it should:

- impart knowledge and generate new knowledge;
- cultivate judgement of facts and opinions;
- develop powers of expression, problem solving ability and wisdom of decision.

The Engineering Council's document goes on to observe that no group of subjects has a monopoly of the qualities necessary to achieve these purposes. For example engineering,

taught properly, lives as fully up to the requirements as the study of physics or English.

Do these three principles amount to your statement that "so far as one can see the spirit of Robbins is still valid" match the spirit of your "affluent and dynamic but divisive" phrase? Affluent and dynamic perhaps, but surely the last phrase for education in the 1990s should be "dynamic but uniting".

Yours sincerely,
JACK EVY,
Director — Engineering Profession Engineering Council

Indecision bodes ill for DHSS

by Jon Turney
Science Correspondent

Indecision in the Department of Health and Social Security has left the department without a chief scientist to direct its £20 million a year research effort for almost a year. And no new appointment is yet in sight.

When the former chief scientific adviser Sir Desmond Pond retired from his half-time post last March, a departmental inquiry was in progress on the possibility of privatizing some of the functions of his office. Nodder — a former DHSS deputy secretary — was ordered by the secretary of state at the DHSS Mr Norman Fowler, to see if some of the office's work could continue "external to the department".

Following Sir Desmond's retirement, the office was left in the hands of his full-time deputy Professor Robin Cole, who agreed to extend his three-year secondment from Sussex University by six months. But Professor Cole himself quit the DHSS at Christmas, without hearing any clear decision on the future of the office.

Outside observers believe the privatization plans have been dropped, but the questionmark put over the chief scientist's job has made it hard to recruit a replacement for Sir Desmond. The other staff in the office are still pursuing their old programmes, which include several million pounds worth of research.

The chief scientist's office in the DHSS has had a troubled history. The department handles funds transferred from the Medical Research Council for commissioned research under the "customer-contractor" arrangements proposed in 1971 by Lord Rothschild. But the MRC won the return of this money in 1981, leaving a smaller operation in the department.

However, the office still has a well-regarded system of research liaison groups organizing work in areas like mental health, work with the elderly, and addiction.

A DHSS official said this week there would be a new deputy in the chief scientist's office in March, and there would be an announcement about the chief scientist's appointment later this year.

Clinical rise, but no cash

Clinical academics are to receive the same 6.3 per cent pay rise as their National Health Service counterparts, but the Government is not going to provide any extra money to help universities meet the cost of the rise.

In a letter to the Committee of Vice-Chancellors and Principals, the Secretary of State for Education, Sir Keith Joseph, said the University Grants Committee could "find the sum necessary" to compensate universities for the difference between this year's clinical and non-clinical awards.

Because the NHS award runs from June 1, as opposed to the academics' award from April 1, however, the compensation will only cover the difference between the non-clinical settlement of 5.25 per cent and the NHS award calculated over 10 months, of 5.3 per cent. Sir Edward Parkes, chairman of the CVC clinical salaries committee, described the compensation as "stamp money".

Sir Keith's letter also confirmed the Government's acceptance of the link between academics' and NHS doctors' and dentists' pay, and added that the universities "would not be given less favourable treatment than the hospitals and community health services in any decision to provide additional funds to meet additional costs."

But Sir Edward said that part of the letter was very ambiguous. "It holds out some hope for the future, although it is difficult to tell if it is a genuine offer." He said he was meeting Sir Keith on Monday to seek clarification of the letter's proposals.

Teacher training deadline set

by Patricia Santinelli

Colleges and polytechnics have been given only a month by the Department of Education and Science to update their bids for teacher training places, originally made in 1984 in response to a letter from the National Advisory Body.

The DES has told teacher training institutions that a deadline of February 28 is vital if the exercise is to be completed in time for an announcement by the Secretary of State this autumn.

This is necessary if the uncertainty surrounding the planning of initial teacher training in the public sector may be resolved and institutions given every opportunity to recruit to target for their 1987 intakes," the letter from

Teachers Branch 1 says.

The department has been in charge of the teacher training exercise for only a few weeks — since it was wrested away from the NAB following the disagreement between Sir Keith Joseph and the board, and then over the timing for announcing revised allocations in December.

But ironically the department is using more or less the same criteria as originally devised by the NAB in making its decisions on institutional allocations, and is asking basically for an update on the response made to a letter sent out by Mr John Bevan, NAB's secretary in the autumn of 1984.

The letter stresses that institutions

should also specify wherever appropriate the subject specialists offered in the primary BED and the number of students taking each.

It also makes it clear that institutions will not be offered individual consultations. Instead, the DES plans to hold regional meetings in a number of centres during March. It says all concerned can attend and, if they wish, supplement their written responses.

The criteria being used by the DES includes viable size; resilience and capacity for development; relationship with inservice education and training; and with other public sector higher education and university provision; voluntary and denominational provision; and cost and relationship with further education teacher training.



Golden opportunity in a less than "golden" environment, one of six photographs taken in the north-east at night by Chris Walnwright, head of media studies at Newcastle Polytechnic, whose work has been purchased by the Arts Council for their national collection. They are part of a series entitled "Perimeters of Power".

Scottish lecturers decide on 6.1% pay offer

Scottish college lecturers have voted to accept a 6.1 per cent pay increase, ending their nine-month long dispute. The five unions on the staff side of the Scottish Joint Negotiating Committee this week formally accepted the offer, which also includes the automatic transfer of lecturers at the top of the Lecturer B scale to the Senior Lecturer 1 scale.

But Mr Jack Dale, further and higher education secretary of the Educational Institute of Scotland, said the settlement compared badly with that achieved south of the border. The automatic scale transfer accounted for less than 1 per cent of the total salary bill, while scale changes in England and Wales would amount to some 4 per cent.

The Scottish settlement also includes an agreement between staff and management to set up a joint working party to review salary structures in general. It hopes to hold its first meeting next week and to report by March 31 in time for the next round of pay negotiations.

Meanwhile college lecturers in England and Wales are to adopt the market force arguments likely to

appeal to ministers in their pay talks with the local authority employers. The National Association of Teachers in Further and Higher Education instructed its negotiating team to seek to hold local authorities to their commitment in 1985 that salary levels had fallen behind.

But union leaders acknowledge that funding for the increases they believe are necessary — 40 per cent to restore the 1975 Houghton reliability levels — will only be forthcoming if ministers can be convinced that the efficiency and quality of the service is being damaged.

The council endorsed a policy of a return to Houghton in two equal stages with a 1986 claim of 20.5 per cent as the first step. It resolved salaries should reflect the range of professional skills and qualifications to ensure teachers matched the standards of their counterparts in industry and commerce "from which they have to be recruited and retained".

Talks between the two sides, based on a joint report which set out the broad outlines of areas for negotiation, have already begun.

Allowance made for pupils hit by dispute

Universities are to make special allowances for applicants for undergraduate places who have had their studies seriously disrupted by the year-long teachers' dispute.

They are to send a special form to head teachers who will be asked to report the extent to which preparation for this summer's examinations has been affected. The forms will be forwarded directly to universities immediately after the examination.

The scheme has been devised by the Universities Central Council on Admissions, in conjunction with the Committee of Vice-Chancellors and Principals and the Secondary Heads Association.

The CVC said universities shared the concern of applicants who were understandably worried about the effect of the dispute on their chances of securing a university place in the autumn.

Manchester suspends disrupters

Three students have been suspended and a fourth offered a conditional reprieve for their part in disturbances at Manchester University during a speech by Mr David Waddington, the Home Office minister, last November.

The verdicts, reached after three weeks of deliberations in a university disciplinary committee, sparked an immediate occupation of the university administration. The students have a week in which to lodge an appeal. All four of the students brought before the committee were found guilty of disrupting the meeting, in which Mr Waddington was assaulted as he tried to address Conservative students. The heaviest punishments were meted out to three members of the Socialist Workers Party.

A first-year economics student, Andrew Marke, was given the longest suspension — until September 1987 — for "being directly responsible for intimidation" of Mr Waddington and trying to prevent free speech.

A final year economics student, David Pennell, was suspended until this September for intimidation, while a second-year politics and history student, Mark Praenkel, was suspended until the end of the summer term for his part in the disturbance.

A Conservative economics student, Damien Debacker, had a two-term suspension waived, allowing him to complete his course subject to good behaviour, because it was accepted that he had been trying to protect Mr Waddington. Nevertheless, he was found guilty of disorderly conduct and bringing the name of the university into disrepute.

Mr Fred Sylvester's bill to make free speech on campus enforceable in law was given an unopposed first reading in the House of Commons this week. The Conservative MP for Wythenshawe, said that the measure was necessary because the tradition of free speech in universities was being challenged on a wide scale.

Opposition to merger

continued from front page

universities have adapted in this way. Natfhe's immediate concern is that the working party called for level funding equivalent to the two institutions' present budgets. With the polytechnic now taking almost three times as many students as the university and receiving £2,803 for each, compared with Keele's £4,629, the union says cuts would be inevitable unless the University Grants Committee lowered its norms. There would have to be a guarantee of additional resources if existing provision was to be maintained.

Spectators attempted to prevent campus police from arresting the runners, but college authorities — who had banned the run — were then taking photographs in order to identify participants. Eighty students have been identified and now face "nude Olympics" hearings.

ANETHESIS

A shot in the dark

A showdown interrupted the last meeting of the Council for National Academic Awards, Kingston Polytechnic director Bob Smith and his deputy Ken Barker, covering at the last minute that the council was to put off approving the poly's self-validation agreement, came crashing up to Gray's Inn Road demanding to know what was going on. Council chairman Sir Alistair Pilkington and others had to leave the council meeting to reassure the Kingston gunslings that the agreement was signed, if not sealed and delivered, and they could return into the South London sunset.

Murmurs of discontent from institute directors of the Natural Environment Research Council, summoned to a meeting at 11.30 sharp in frozen Nottinghamshire to be instructed in the virtues of the council's latest corporate plan. The directors, from as far afield as Plymouth and Ayr, duly assembled at the appointed time. The only absentees — the chairman and secretary of council, who both misjudged their journey times.

Day for action

Sheffield University, host this week to a conference on university management skills whose main speaker was university efficiency guru Sir Alex Jarratt, has some way to go in the efficiency stakes. The conference was on February 11. It was unannounced and the press release sent out on February 10. Brighton poly bursar Derek Fowle, on the other hand, has efficiency down to a fine art. He has told polytechnic staff travelling through London that in future they must buy all tube and rail tickets simultaneously, so that Brighton may benefit from the 10p saving.

London University Audio-Visual Centre and the Royal Veterinary College had a stand at Cuffs this year. Not with live exhibits, but their latest production "The Videotape Guide to Your Dog". They were showing slide 2, which contains 160 movie clips, 300 still pictures, 400 pages of text, and nine sections on canine illnesses. Sounds like a video nasty.

Bare cheek

Despite opposition from college authorities, students at Purdue University, Indiana, this year continued their long-established tradition of a naked marathon run around a college quadrangle on the coldest night of the year. Previously open to male students only, the competition was open to women this year, and about 100 competitors of both sexes ran just before midnight on January 22 in temperatures only slightly above freezing.

Spectators attempted to prevent campus police from arresting the runners, but college authorities — who had banned the run — were then taking photographs in order to identify participants. Eighty students have been identified and now face "nude Olympics" hearings.

You have to be up early to catch Leeds Polytechnic's new director, Christopher Price. Mr Price, formerly more often visible late at night in the House of Commons than early on on campus, has said he wants poly staff to feel free to come and see him in his office between 7.30 and 8.30 on Tuesday mornings. Four people came this week. He told an incredulous *Anti-Thesis*. Did he offer them breakfast? No, just strong black coffee.



Raising the political pay temperature

After 10 months of negotiations we have now arrived at a pay settlement in Committee A. The route has been long and tortuous. The flabby underbelly of the universities' academic panel hardly seemed able to respond to the knocks we gave them. Their acknowledged problems on funding, coupled with their negative attitude throughout the negotiations, soured any chance of an agreed result. Most universities have in fact budgeted around the final settlement and it should present no real difficulty for them. However, members' pockets have been hit yet again with a pay settlement which does not maintain purchasing power.

The Committee A report calls for a review of salaries by April 1987 with an undertaking to reflect the outcome of the review in the April 1988 settlement. We now await a meeting of Committee B to consider the report and the DES response. The Association of University Teachers' effort must now move into a new phase and be directed towards raising the political pay temperature.

The public expenditure discussions will commence in the late spring. This is likely to be our last chance to push the case for higher education before the next general election when the current Secretary of State will depart, presumably to higher places. I hope he will accept that unless he changes tack he will be leaving a notorious legacy. In future years our children will not ask "Who was Sir Keith Joseph?" They will be asking "Why?" We need to ensure that we do not let Sir Keith's bequest to the nation take the form of a devastated and broken university system.

And where do the University Grants Committee's priorities lie? The Public Expenditure White Paper published last month showed that there is no justification for the UGC's planning assumption of a 2 per cent cash cut per annum. The white paper shows an average annual cut of 1 per cent by 1988/89. The UGC already has funds in reserve. If the main committee kept to its 2 per cent planning assumptions then by 1988/89 the UGC would have annual reserves totalling more than £100 million. This so-called "good housekeeping" would, however, only have been found at a cost of 2,500 academic and academic related posts.

University responses to the UGC planning letter 12/85 show that no one is crying wolf. After 1981 there is no fat to cut. Of course there may be pockets of inefficiency, but that is hardly justification for what the UGC is proposing.

In this new phase of the campaign we perhaps need to take stock of what we have done and have been able to achieve. The AUT has contacted and influenced many more individuals and organizations than had even been thought possible. Many of those universities have been persuaded to incorporate in their submissions to the green paper criticisms of the Government's policy on higher education. Other organizations that had not been intending to submit criticisms have done so. The pressure brought about by the AUT helped change the tone and content of the UGC response.

Our successful one day strike sent a clear signal to the Government. We will be following that up with a wave of messages on access, funding, pay and research. AUT members have shown that they are entitled to an adequate response.

Diana Warwick

The author is general secretary of the Association of University Teachers.

'Charters for all' call from Adam Smith

by Karen Gold

The problem facing higher education is its near total dependence on public money, leading to lack of freedom, a lack of choice, and absence of responsibility, according to a paper from the right-wing Adam Smith Institute published this week.

The paper, 'University Challenge' by Douglas Mason, calls for all polytechnics and colleges to be given university-style charters and freedom from external quality controls so that institutions can compete equally in the student market.

Free competition with students supporting themselves preferably with loans but otherwise with government vouchers would mean the abolition of all the higher education quangos, including the University Grants Com-

mittee and National Advisory Body, it says. Vested interests in the universities have denounced cuts and the government green paper on higher education. Mr Mason says. But the logical response to that is not defeatism but independence, the paper says. Instead the universities have chosen to be lobbyists for the status quo or for expansion.

But estimates of the benefit to the country of giving higher education to individuals to not take account of the fact that those individuals benefit the most; and that the money so invested might be more fruitfully invested elsewhere. If the main income of universities and colleges came direct from students, the students would control the supply through the exercise of their purchasing power.

"Demand would be determined in the same way as it is for the other commodities, not just in terms of the global numbers seeking higher education but also in terms of the particular subjects students wished to study and the institutions in which they wished to study them," the report says. Such a system would also encourage the development of new institutions.

The paper comes down in favour of student loans rather than a voucher system, since the latter would still require central direction as to the value of the vouchers and where they could be "spent". Since student demand would determine the number of places at institutions, these would have to be more flexible in size, so academic tenure would have to be abolished.

Such a system would be more likely to attract students into courses leading

to jobs, whereas present attempts switch students from arts to science within overall set numbers, succeeded in attracting unwilling students of lower quality, into places in subjects they prefer to study.

Research should preferably be privately funded, the paper says, citing the Kewster parapsychology as an example of privately funded research that would not have been central bureaucratic criteria. Research councils should have fewer postgraduate awards be distributed among students to be the institutions they choose.

University Challenge: Education in the 1990s by Douglas Mason, 29 from the Adam Smith Institute, 2 Abbey Orchard Street, London SW1P 2HJ.

King's comes back into the NUS fold

by David Jobbins

King's College, London is to rejoin the National Union of Students after almost five years. A referendum at the college, which has now merged with the former Chelsea and Queen Elizabeth colleges, gave a 1,190-780 vote in favour of affiliation. About a third of its students took part.

King's left NUS in 1981 and has since been regarded as a bastion of the right within the student movement. An Anti-NUS Society, with a leadership composed largely of theology students, fought a campaign to keep the college out of the referendum.

Mr Duane Passman, acting general secretary of the King's (OC) union, said that although a site-by-site break-

down of voting had not been made, he felt there had been a majority for re-affiliation on all three including King's.

The vote isolates Imperial College, London as one of the few major higher education institutions in England and Wales outside the NUS.

According to Mr Passman there was a majority in favour of affiliation at all three colleges. Opponents had made much of the financial implications but NUS had agreed to a phasing in of the affiliation fees over a five year period.

Links between Chelsea and Queen Elizabeth colleges and NUS had remained unbroken despite King's decision to secede.

Meanwhile the main battle for next

year's presidency of the NUS will be between two Labour Party candidates.

Ms Vicki Phillips, NUS vice president (welfare) has been adopted as the "official" National Organization of Labour Students' candidate for president at the organization's Easter conference. Her opponent is Mr Andy Whyte, the Left Alliance candidate.

NOLS is not putting up a candidate for vice president, (education) and this may well provide an opening for Ms Linzi Brand, an independent member of the NUS executive. The unanswered question is how the dissident Socialist Organizer-backed Socialist Students in NOLS will react. Defeated in the presidential race, SSIN may well aim for the welfare brief.

Dispute of the decade rumbles on

by Olga Wojtas

Scottish Correspondent

Dundee University academics seeking the intervention of the Arbitration, Conciliation and Arbitration Service in an industrial relations dispute which has lasted for 10 years.

The Association of University Teachers is to meet ACAS next week in a bid to establish a provisional agreement with the university management on issues of conditions of employment.

Dr David Heilman, regional director of the AUT, said the university agreed to a normal negotiating procedure.

Last March, 96 per cent of Dundee AUT members, on a 78 per cent turnout, had voted for such a procedure. The university court had failed to come to a decision. Despite further negotiations from the university, the union should not be considered again before the end of 1987, unless a majority of the members endorsed a request for further talks in a postal ballot.

The last court meeting was given a confidential list of the names of about 90 members of staff who were on strike on the AUT's day of action last week. Mr Heilman said this was an extraordinary move and seemed like an attempt at intimidation. "In any case it is only a partial list, because heads of department, who were asked to submit names, will have been strike themselves or unable to submit who was on strike."

Mr Heilman added that the number of personal cases being brought to the AUT, complaining about management pressure at Dundee, had reached epidemic proportions in recent years. "Individuals have been under pressure to take early retirement or voluntary severance in circumstances where this should have been on a voluntary basis. The pressure seems to come from the very top," he said.

The AUT also intends resisting a move by Dundee to deduct a large proportion of striking academics' salaries, than is the norm. The academics do not have a defined working week, most universities have accepted that the deduction should be 1/365, but Dundee plans to deduct 1/260.

Dundee's secretary, Mr Robertson, said the courts had decided some length what proportion of salaries should be deducted, with some members suggesting it should be calculated on a six day week basis. "The argument was basically what was fair and equitable," he said.



Nottingham artist Margaret Bryan, who died last year, is being commemorated at Trent Polytechnic in an exhibition of her wood engravings discovered by polytechnic lecturer Tony Ingram. The exhibition, including this industrial landscape, is in the polytechnic's Bonington gallery and runs until February 21.

Scientists want open and independent UGC

by Jon Turney
Science Correspondent

A more independent, more open University Grants Committee with a stronger secretariat is the Royal Society's prescription in its submission to the Croham inquiry into the UGC's role and constitution.

The society says if the UGC's advice is to command respect it must be seen to be independent, which could be achieved either by retaining the present committee arrangement but having more non-academic members or by creating a two-tier committee with the upper, policy-body carrying a majority of non-academics. The latter is also the option favoured by the Fellowship of Engineering in its own submission to Croham.

The Royal Society also says the UGC should be the Government's sole adviser on the block grant to universities and should not be bypassed by negotiations with other bodies that have a poorer understanding of the needs and constraints of the university system.

The society comes out against any

merger of the UGC with the public sector National Advisory Body, which it says would create an unwieldy institution overseeing a large number of disparate clients. It argues that overall policy for higher education is best left to government itself.

In a separate submission to Croham, the Engineering Council says a reformed UGC must have more power to steer the university system, especially toward shifts in the subject balance, economic management of institutions and expediting rationalization.

The council also favours a stronger non-academic membership, with more employers' representatives on the committee, and says the quality of graduates should be judged by attraction to employers as well as class of degree.

The council also takes the opportunity to repeat several points made in its recent reply to the Department of Education and Science green paper on higher education, suggesting that individual universities should be rewarded for attracting income from sources outside government, and that universities must be "more flexible" on salaries, promotion and redundancy.

FEU extended - and cut

by Patricia Santinelli

Sir Keith Joseph, Secretary of State for Education and Science, has decided to extend the life of the Further Education Unit for another three years but has gone ahead with threatened cuts in its funding.

The unit had hoped that after representations its budget would be kept at the planned £2 million and above for 1986/87. Instead funding has been reduced to £1.9 million as originally proposed by the Department of Education and Science, and will fall further to £1.7 million in the following year.

The unit will be left with only £600,000 for research and development after paying salaries. This means that it will not be able to undertake any new work in some fundamental areas such as vocational preparation, education management, experimental colleges and staff development.

The unit has already had to withdraw from a low achievement project being undertaken with Northampton local education authority because of lack of resources.

Most of the new appointments to the board announced by Sir Keith are straight replacements, except for the appointment of Mr John Barnes, director general of the City and Guilds Institute.

Access restricted to blacks only

by Maggie Richards

An access course aimed exclusively at black students and taught only by black lecturers is to be launched in Sheffield. The scheme, which begins in April, will on completion guarantee 18 places for students on degree courses at Sheffield City Polytechnic.

After taking legal advice Sheffield has decided to go ahead with the proposal without seeking any special designation order under race relations legislation.

The local education authority is arguing that the course comes under clauses in the legislation which relate to provision for under-represented groups in areas of employment and education.

So far 30 firm applications have been received for the 18 places on the first course, and interviews are scheduled to begin next week.

The part-time course will be run at Granville College of Further Education in Sheffield over four terms. Eventually it is hoped to organise a full-time course over three terms.

Successful students will be offered

places on polytechnic degree courses in applied social studies, education, public administration and housing studies.

The access course is an attempt to redress the imbalance between black and white graduates, and follows discussions between the local authority and black community groups in the city.

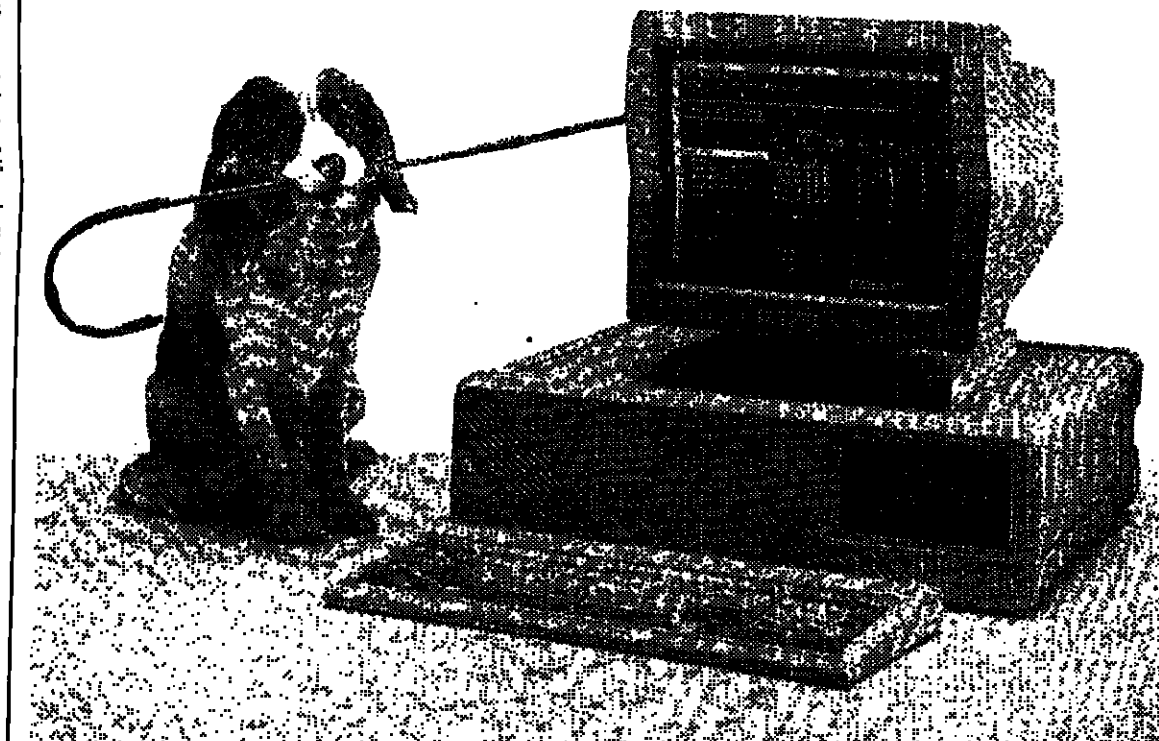
Sheffield does not have an excessively large black population - the course has been designed to meet the needs of an estimated 6 per cent of the adult population.

But the local authority is hopeful that an extension of the scheme may lead to other initiatives for other groups who have missed out on educational opportunities.

In their studies, students attending the first access course will examine many subjects from a black perspective.

But Mr Peter Wilson, curriculum development officer for the project, emphasised that the scheme was not intended to be a permanent solution to the problem of attracting black people into higher education.

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Nino Ole: Newcastle University student Nino Ole shows off his haul of trophies from the English-Welsh Universities Skiing Championships, held in Switzerland. The Norwegian student of mechanical engineering was the most successful of the 400 competitors, winning three events.

Unesco 'will rise' from Tory ashes

The United Kingdom would seek readmission to Unesco as soon as Mrs Thatcher was deposed as Prime Minister or the Conservatives lost the next election, according to Australia's ambassador to Unesco, Mr Gough Whitlam.

Mr Whitlam said the United States would also return to the UN agency although probably not immediately after President Reagan left office. "The British will be out of Unesco as long as Mrs Thatcher is Prime Minister, but not a month longer," Mr Whitlam said. There was no alternative arrangement for most of the things Unesco did and there was no chance of

a similar organization being established.

The British press, which had helped persuade the British to pull out of Unesco, had clearly been manipulated by the American right-wing organization, the Heritage Foundation, Mr Whitlam said.

While agreeing that many of the criticisms had been levelled at the operations of Unesco had been justified, Mr Whitlam insisted that marked reforms to the 40-year-old body had taken place one British and America had announced their intentions to withdraw.

Observatories' fate is in the stars

The fate of the Science and Engineering Research Council's two UK astronomy centres now rests with a detailed study of options for reorganization by the council's chairman, Professor Bill Mitchell.

The two - the Royal Greenwich Observatory at Herstmonceux in Sussex and the Royal Observatory, Edinburgh - have been reviewed repeatedly by SERC committees without any firm verdict on their future.

The latest review, by a committee on ground-based astronomy under the former council chairman Sir John Kingman, put four options before the

full council last month. They included retaining the status quo, moving the RGO to Edinburgh, or to a "green field" site next to a university. Professor Kingman's committee made no strong recommendation, and the council meeting agreed to defer a decision pending further investigation.

Professor Mitchell has written to eight universities asking if they might be interested in contributing to some or all of the work now undertaken by the two existing observatories - which takes in management and instrument development for the council's overseas telescopes on Hawaii and La Palma in

the Canary Islands.

The eight - which include Cambridge, Manchester, London, Sussex and Edinburgh - have all indicated a willingness to consider accommodating one or other of the Royal observatories. The chairman or secretary of SERC will now discuss the possibilities in detail with vice chancellors and principals.

The full council will consider the scientific and financial costs and benefits of each option at its next meeting, when members hope to reach a final decision.

After Alvey

A new industry-led committee was announced last week to consider organization of computer research after the five-year Alvey programme finishes in 1988. The committee has been organised by Sir Robert Telford, chairman of the Alvey steering group, and will be chaired by Sir Austin Bide, head of British Leyland and former chairman of Glaxo.

Bruce chosen

Malcolm Bruce, Liberal MP for Gordon, has been elected rector of Dundee University with 546 votes, 313 more than his closest rival, Labour MP Tam Dalyell.

overseas news

Universities dependent on war footing bills

from William Norris

WASHINGTON Universities in the United States are now dependent on the Pentagon for research funding as they were at the height of the Vietnam war. And with President Reagan's new plea for doubled spending on "star wars" research in the coming year, that dependence is likely to increase.

A new study produced by the Council on Economic Priorities reveals that since 1980, Department of Defence funding for university research has jumped from \$495 million to \$930 million - an increase of 89 per cent. Today it accounts for 16 per cent of all federal spending for university research, up from 10 per cent in 1980.

The Council on Economic Priorities is a non-profit research organization, based in New York, which specializes in national security issues. It has made no secret of its opposition to the strategic defence initiative in several earlier studies. The new report concludes that such a large increase in Pentagon spending for academic re-

search raises troubling questions about the balance between basic research and the work done on weapons projects, as well as the future of academic freedom to publish research findings.

Said Alice Tappert Martin, executive director of the council: "The practical effect of these numbers is that the usual balance between civilian and military funding is being threatened. Such a shift could hurt the nation's technological growth since development in such critical areas as high speed computing and new micro-electronics devices will be dominated by military rather than civilian needs."

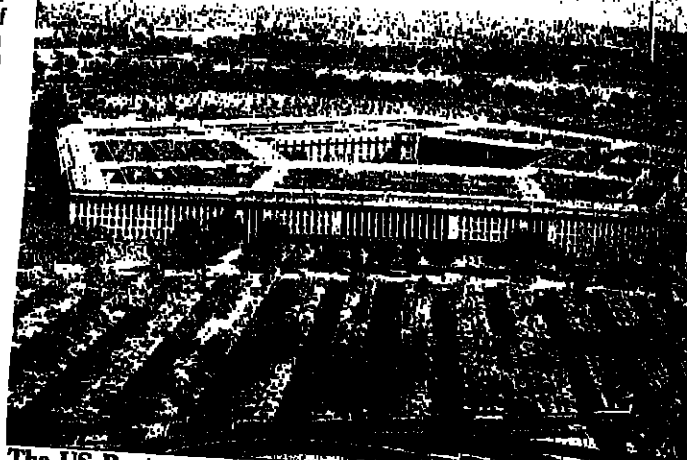
Although more than 2,400 scientists at 62 universities have now signed petitions pledging not to take money for "star wars" research, the defence department appears to have had little difficulty in placing research contracts. At least 15 universities in the north-east, 13 in the west, nine in the south and seven in the mid-west are already participating in the programme. Support is being generated through campus republican organizations, and the

conservative group, Young Americans for Freedom.

"We feel there's a real turn around on college campuses," said Bruce Hallman, press director of High Frontier, a pro-SDI lobbying group.

The biggest recipient of SDI funds has been the Massachusetts Institute of Technology and its off-campus Lincoln Laboratory, which received almost \$60 million last year. This represented about 70 per cent of all the "star wars" contracts awarded in 1985.

Altogether, MIT now depends on the Pentagon for 59 per cent of its research funding, amounting to \$303 million. The council report claims that even more significant than the increase in "star wars" funding is the level of dependence by certain key high-tech research fields on Pentagon funding. It points out that in 1985 more than half of federally-funded university work in mathematics and computer sciences was sponsored by the defence department, representing \$117.4 million out of total federal spending of \$232.1 million in these fields.



The US Pentagon, source of income for "star wars" research

Cash boost to forge industrial links

from David Dickson

PARIS France is planning to increase the support for scientific research which it provides universities and government laboratories through the Centre National de la Recherche Scientifique (CNRS) by 8.3 per cent this year over the comparable figure for 1985.

The additional funds, which will bring the total budget of the research agency to £854 million, will mean a real growth of around 4 per cent. Although this is slightly lower than the average rate of increase that has been maintained since the Socialist government came to power in 1981, it is in line with a three-year research law passed last summer.

The largest increases will go to activities related to the CNRS's recent efforts to build closer links between the research community and the industrial sector. Thus there will be a 12.4 per cent growth in support for engineering sciences, and 58 per cent more for research in new materials.

In addition, a major effort is being placed on upgrading research equipment, and in particular providing new computing facilities in CNRS laboratories, many of which are situated in universities. The total number of personnel will also be increased by the creation of 300 new posts.

Another top priority will be increased co-operation with other countries, particularly in Europe. The budget for supporting such activities will grow by 13.2 per cent, which will be used for establishing three-year programmes linking one or more CNRS laboratories to foreign partners in joint research programmes.

The agency has also agreed that £4.7 million out of its budget will go towards research being carried out in the framework of the Eureka programme, launched as a French initiative last year to co-ordinate development efforts in a wide range of advanced technologies between 18 European countries.

M. Pierre Papon, the director of the CNRS, said last week that the increased funds will permit the agency to pursue two goals which have been among its top priorities over the past few years, activities, and the development of new research laboratories and scientists in both the public and private sectors of industry.

A major effort on the first of these - although one which has been received with mixed feelings by many of the staff involved - has been the transfer due to take place during the course of the year of the agency's centre for scientific and technical documentation from Paris to the industrially-depressed area of Lorraine in Eastern France.

On the second, Papon points out that there are now 26 laboratories being operated jointly by the CNRS and an industrial company on topics ranging from gallium arsenide to po-

lymer engineering - when he was appointed to his current position in 1982, there had only been one.

"There has been major change over the past few years in the attitudes of scientists, who have learned the importance of developing their links with industry, as well as working with other research organizations," says Papon.

The emphasis has been placed on centralizing the CNRS's activities and focusing more directly on industrial needs have both been given a particular significance in recent months in the light of criticism of the agency that has come from members of the two main French opposition parties which currently expect to be voted into power in March.

While supporting the recent increases in government support for science, the critics - reflecting charges that are frequently heard within Paris of the scientific community itself - claim that CNRS is excessively bureaucratic as a result of trying to organize too many things from Paris. The most extreme demands are that the agency should be dissolved, and that the government funds handed directly to privately-run laboratories and to universities.

Less radical have been suggestions that the CNRS should reduce its activities as a research-performing agency - it currently employs 23,500 research workers in its laboratories, many of which are linked to universities - and become more of a grant-making agency, along the lines of the US National Science Foundation.

Papon dismisses charges that the CNRS is excessively bureaucratic as "political slogans", pointing out that "France is a country which has a strong administrative tradition". He says that a degree of central planning is essential if the research community is to fulfil its social obligations in a coherent way, and that there has been no increase in the number of administrative staff employed over the past five years.

He admits that the CNRS needs to continue to evolve (just as the minister for research, M. Hubert Curien, said in a speech delivered last month that the CNRS still faced a number of problems, such as the top-heavy age structure of its scientific community, which require further "adaptation").

However, rather than opting for an NSF-style solution, Papon says that he would prefer to see a continuation of current policies of maintaining a clear set of strategic research priorities, and at the same time increasing the number of more formal links with as wide a range as possible of outside organizations.

Following discussions that took place with the Ministry of National Education, formal agreements have been signed over the past two years between 47 out of France's 77 universities setting out the mutual responsibilities of the CNRS and the individual university concerned.

Plan for more college autonomy

from A. S. Abraham

BOMBAY In a preview of what India's new education policy (NEP) is likely to contain, education ministers from all 22 states as well as top federal ministers responsible for education have agreed on the broad outline of NEP in schools and universities and in the formal as well as non-formal set-up. A final draft, based on these proposals, is to be put before parliament in April.

In higher education, where the West Bengal delegate differed from his fellow ministers, cautious endorsement was given to the principle of autonomy for individual colleges affiliated to universities. The federal minister for education argued that disaffiliation and decentralization were world-wide trends and were necessary in India as well to allow for greater flexibility in administration, curriculum and development. The consensus of opinion was that autonomy should be cautiously introduced in a handful of colleges before deciding whether to expand it.

The present grant-in-aid system operated by the University Grants Commission came in for criticism and it was suggested that it be replaced by one which ensured that the UGC, the recipient university and the state government were able to fulfil the objectives for which the funds had been allocated. The UGC in particular was asked to devise means of monitoring and evaluating individual universities before continuing with its assistance to them.

On examination reforms, it was recommended, as in the case of schools, that a national testing service as well as internal evaluation be introduced progressively to facilitate comparability in standards of attainment. University degrees need not be stipulated for jobs not calling for specialized knowledge.

The emphasis, it was urged, should no longer be on unplanned expansion of higher education, but rather the consolidation of existing facilities. New institutions should be allowed only in economically backward areas such as tribal regions.

However, open universities should be encouraged as an alternative to formal system, with the proviso that any state wishing to open one should co-ordinate its plans with the reformed Indira Gandhi National Open University to prevent duplication of resources.

As a matter of policy, less learning in various forms should be encouraged to cater to the growing demand for higher education. In addition to the already introduced open or formal higher education, there should be a main cause for declining standards.

Foreign students will still be heavily subsidized

Discriminatory fee policies for overseas students in some developed nations are aggravating the divide between the north and the south and it is now time for the north to drop such policies, an international conference of university registrars and administrators was told in New Delhi.

Dr Amrik Singh, a former secretary of the Association of Indian Universities, and a noted Indian educationist, said discussions had taken place about whether India should follow Britain and impose higher fees for foreign students. The talks started three or four years ago after India found the number of

foreign students in its universities had jumped from 5,000 to 45,000, causing overcrowding in major centres together with law and order problems.

The decision was made not to help students have to pay as little as last year - the same as Indian students for courses which probably cost country up to \$800 per student. Singh went on to quote at length the Willy Brandt commission report on the north-south divide and said remained optimistic that countries like the UK, the US, Australia and Canada would relent on discriminatory fees.

Anger mounts over lack of space progress

The West German government is facing increasing pressure from France and growing opposition at home over its reluctance to participate in the French space project Hermes.

The controversy over the Hermes project intensified after West German Chancellor Kohl, pledging financial support, failed to agree to the French proposal in a meeting with President Mitterrand in the German city of Baden-Baden earlier this month.

In a sign of irritation at West Germany's lukewarm response, France has urged Bonn to make a binding statement on its intentions in the next few weeks. Speaking to reporters in Bonn, the head of the D'Allet, said otherwise the Hermes contract would go to other countries. The French project involves a two-man reusable space shuttle modelled to finance at least half the £1.9 billion would carry smaller payloads and be able to stay in space longer than the US shuttle. The first flight is scheduled for 1995.

Bonn's position is that it has exhausted its financial possibilities by committing itself to participate in the American Columbus project for a manned station in space. This decision taken in January 1985, the government says, means that Bonn will have no

funds for new space programmes until the early 1990s.

Despite criticism from the Social Democratic (SPD) opposition party, which has come out strongly in favour of Hermes, finance minister Gerhard Stoltenberg insists that there are no additional funds. The only possibility, he says, would be to use extra money from the research ministry's budget, Hans-Dietrich Genscher.

For his part, however, research minister Heinz Reichenhuber, has made clear he will not make any funds available from his present budget. While reaffirming his backing for an autonomous European space programme, he has raised a number of objections to the Hermes project.

Most important, he has raised doubts about the technology of a Hermes which he says would be merely outbid by the late 1990s. Second, Reichenhuber, has expressed strong objections against the planned launch centre in Kourou, French Guiana. Politically and strategically insecure, at least in the long term.

Defending his position in parliament last week Reichenhuber said there was no room for manoeuvre in his ministry's budget for 1986. DM 870 million out of the DM 7.4 billion budget were

already earmarked for space research and technology, compared to DM 20 million in 1985.

Any further rise would grow at the expense of basic research, Reichenhuber said. However basic research could not be neglected, but has to be expanded systematically to ensure the competitiveness of German science. The share of funds allocated to basic research will go up to 26 per cent of the budget, compared to 27 per cent in 1983.

However, the SPD, which is critical for an "European solution", is urging the government to give up West German participation in the US Columbus project in favour of Hermes. A refusal to join the French programme would pose a ban "explosive strain" on French German relations, SPD delegate, Lothar Fischer warned the Bundestag.

Meanwhile, a report commissioned by Reichenhuber from the German Research Agency for Air and Space Traffic (DFVLR) has also come out in favour of participation in Hermes. According to the report, the project would be backed for a number of good reasons. It also recommended that apart from participating in both Columbus and Hermes Bonn should set up a national high technology programme for space with an annual budget of some DM 600 million.

Threat to draft dodgers

from William Norris

WASHINGTON America's education secretary, William Bennett, who has already endeared himself to students by turning over the names of loan defaulters to the inland revenue service, has now gone one step further: he announced last week that records of all those receiving federal aid would be turned over to the selective service system.

This means in practice that grants will be refused to any student who has not registered for the draft, and they may also face prosecution.

The United States has not had national service - the draft - since 1973. But in 1979, after the Soviet invasion of Afghanistan, President Carter required all young men to register at their local post office within one month of their 18th birthday for possible call-up. It is not known how many students have failed to register, but the numbers are believed to be small.

A law was passed by congress in 1982, denying student aid to any who failed to register, but until now it has never been enforced, largely because of opposition from many college and university organizations who feared an administrative burden. But now Mr Bennett is merely proposing to turn over to the authorities the education department's own computer tape of aid applicants.

Those who expect to receive benefits such as federal student aid should be the first to comply with laws requiring registration," he told a news conference. "This agreement will not only protect the federal taxpayer but also fulfill our obligation to those millions of five young men who have registered to serve their country if ever needed."

For the time being the scheme will affect only the five million students who apply each year for Pell grants. Guaranteed student loan applicants, whose aid comes through private lending agencies, are safe at present - but probably not for long.

Switch to radio lectures

from D. B. Udalgama

COLOMBO Sri Lanka's open university has started to broadcast lectures over the radio in an effort to reach a greater number of students. The programme is in addition to the printed lessons, face-to-face classes, seminars and practical lessons. Initially, there will be weekly half-hour broadcasts in Sinhalese, Tamil and English. Depending on its success, the scheme will be extended to television, according to university authorities.

Professor Dayanitha Wijesekera, vice chancellor of the university recently had talks with the director general of broadcasting and other officials on the technicalities of the radio programme.

This followed the report of a joint evaluation committee appointed by the University Grants Commission which said that the open university had not made adequate use of the press, radio and television for its teaching programmes.

Part-time study boom - but grants cash goes begging

Part-time higher education is booming in America. In fact, in terms of student enrolment, it is about the only aspect of higher education which is booming. Figures released this week by the College Board show that over the past five years the average part-time enrolments at two- and four-year colleges have gone up by 14 per cent and 6 per cent respectively. Full-time enrolments over the same period have been virtually static.

Nowhere has the trend been more evident than in New York State, where almost one third of the undergraduates are now part-timers. And unlike most

Duty to state is top priority

The Polish United Workers Party had launched what General Jaruzelski described as the "battle for the mind and hearts" of young people. A plenary meeting of the party's central committee, convened ostensibly to discuss the problems of the Polish educational system, has made it clear that the main issue is not lack of funding and facilities, serious though these shortages are, but the need to make Polish education completely socialist and oriented to the needs of the state. As Politburo member Tadeusz Porebski told the plenary meeting: "A teacher who does not recognize the *raison d'être* of the socialist state cannot perform his duties properly."

In the higher education sector, in particular, the low rate of party membership is causing considerable anxiety. Although during the last academic year, membership did not actually decrease - according to Porebski, the "first time" for an unspecified number of years, that this was so - the level of 26 per cent party members is due, for the most part, to senior professors who will be retiring in the course of the next few years. The party, moreover, says Porebski should be "filled with anxiety" at the low rate of membership among students.

The party's priorities in the universities should be, therefore, a stepping-up of party "cadre" policy, increasing party involvement in the "efficient administration" of universities and colleges, the intensification of the activity of the party cells in the education sector, the "assessment" of all workers in education, and "the launching of activities to strengthen the socialist and secular character" of education.

At the same time, there was lavish praise of the new Higher Education Act, which it was claimed would strengthen the autonomy of the universities, although the academic community, which did all in its power to block the act, would say that it does the opposite.

Not surprisingly, the Solidarity era has been blamed for disrupting the "didactic process" in the universities. During martial law, formal postgraduate education virtually came to a halt and has not yet been properly re-instituted - but the party's recommendation is to reopen postgraduate courses, but to select promising young scholars to do their doctoral research in other countries of the socialist bloc, thereby strengthening international co-operation.

Investment in university research, too, it was urged should be concentrated on those subjects specially singled out by the Comcon integrated research plan drawn up in Moscow last December. The lack of hard currency for learned journals and foreign equipment would restrict research to a small number of well-equipped inter-university laboratories which the country's 70 or so higher education establishments would have to share - however costly and time-consuming the logistics.

The profound shortage of primary and secondary school teachers also has its effect on higher education. Some 18

overseas news

Duty to state is top priority

Compulsory courses in Marxism-Leninism will be "improved", and special emphasis will be placed on the importance of the (also compulsory) military and civil defence courses and training in socialist citizenship.

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War veterans honoured with a place

by Dilip Hirji

As Iran celebrates the seventh anniversary of its revolution this week, its Supreme Council for Cultural Revolution will find it an occasion for self-congratulation. The SCCR's programme of Islamization of higher education has gone well; and after years of turmoil followed by closure of universities, the higher educational system is now back to normal.

This year, according to official sources, university admissions are one-fifth up on the previous year. The overall student body of 140,000 in the country's 24 universities compares favourably with the pre-revolution total of 130,000. Of the 23,000 students of Tehran University some 30 per cent are female.

Competition for university places last June was tough: 440,000 applicants for 40,000 admissions. The applicants underwent two entrance examinations, including one on Islam and Islamic government. Special consideration was given to those who had been to the war front with Iraq for six months or more, and the family members of the war dead. For others it was a straight contest of merit, with the top 8 to 9 per cent qualifying for a university place.

The successful applicants were then investigated by ministry of information and other intelligence agencies for their political background. Apparently the government is unwilling to invest in those whom it considers insufficiently Islamic.

That cultural revolution is high on the regime's agenda is obvious from the membership of the SCCR. It is now headed by President Ali Khamenei, which was not the case when it was first set up by Ayatollah Khomeini in

per cent of teachers have only secondary education themselves - and it has been suggested that some university lecturers and researchers should be sent to boost teaching in the primary and secondary sectors.

Another major tenet of socialist education - the upgrading of workers' qualifications - is also causing concern. Relatively few workers are taking advantage of the state-sponsored self-improvement courses possibly, it was suggested, because enterprise managers gave them too little encouragement. Long standing plans for an "open university", might, it was suggested, be revived.

But on one of the key points of party higher education policy, "positive discrimination" in favour of the children of workers and peasants, the party elite now seems willing to listen to the academics.

For many years, the official policy has been to award extra marks in the entrance examinations to young people from the appropriate peasant or proletarian background. Unfortunately, this frequently meant that they arrived at university unable to benefit from the courses, since their schooling particularly in the case of young people from remote country press, was inadequate.

During the Solidarity period in particular academics pressed for the introduction of a pre-freshman "zero year" for bright but disadvantaged young people, to bring them up to standard. The first such preparatory courses, the plenum was told, have now been organized, and will begin in the autumn, although only on an experimental basis in a few selected universities and colleges.



Students protesting in Tehran as Islamization gathered pace.

June 1980. It includes such luminaries as parliament speaker Hashemi-Rafsanjani, chief justice Moavi-Rabbani, and ministers of Islamic guidance, and culture and higher education.

Following Ayatollah Khomeini's guidelines, the SCCR has tried to achieve the twin objectives of ending cultural imperialism, whether of Western or Eastern variety, and imbuing universities with Islamic values.

It has redesigned curricula; sponsored new textbooks or modified the existing ones in the light of Islamic precepts; set up in-service courses on Islam for the teaching staff; and replaced Western concepts in education with Islamic ones. It has organized the

"university crusade" for students and teachers, urged faculty members to participate in the activities of the "reconstruction crusade", and encouraged university employees to join the local Islamic Association.

An example of the redesigning of the curriculum is the general education programme. Its secular content has now been changed to courses in Islamic morality; history of Islam; and revolutionary movements in Islamic countries during the past century.

The problem arose in social sciences. Here the SCCR's task was to purge Iranian society of the Western values injected into it through social sciences conceived and developed by Western scholars.

they had also hedged it about with bureaucratic rules which effectively precluded any new part-time students from applying. And colleges which did get to hear of the scheme were only being reimbursed at the end of the term instead of the beginning, causing a cash-flow problem which curbed their enthusiasm.

Slightly shamefaced, the regents have gone back to Governor Mario Cuomo, promising to amend their rules and to do better in future. They are asking for another \$11 million dollars, and the word from the state senate is that they are likely to get it.



Sorry, miracles are off

Budding missionaries in California with short legs are going to have to stay that way. A practical course on miracles at the Fuller Theological Seminary in Pasadena has been suspended after objections by the theological faculty.

Fuller, which is a leading evangelical seminary with some 3,000 students, has been offering the course since 1982. It was intended to give missionary-minded students experience in praying for the sick, and dealing with claims about the supernatural which are often made in third world countries. Since its inception the course has always been fully subscribed.

The problem seems to have been that it was a little too successful. One student who took the course, Marlon Phillips, was quoted in the *Washington Post* this week as having seen two instances of the lengthening of short legs during class prayer, one of which appears to have been genuine. Phillips himself had a sore right hand during one session, which was cured by another student saying prayers over it.

Far from welcoming this evidence of divine intervention, however, the college authorities drew back. "There are things that are appropriate when done in a church that are not appropriate in an academic setting," said Jack Rogers, association provost for church relations.

The announcement suspending the course, published in the school's weekly newspaper, says: "This decision was taken to permit time to review the biblical, theological, historical and statistical foundations of God's usual and unusual interventions in the human process."

It is expected that the course will be re-offered again later this year - minus the miracles.

Two killed in Haiti demo

from Ed Brandon

KINGSTON University and secondary school students were in the forefront of the agitation which brought an end to the regime of Jean-Claude Duvalier in Haiti. Reports reaching Jamaica speak of at least two students killed in the northern coastal city of Gonaïves, when military vehicles were driven into crowds of demonstrators. The Haitian security forces also used whips, sticks and automatic weapons to disperse the protesters.

Troops were flown in to Gonaïves by helicopter as students set up roadblocks on the main routes to the city - motorists were required to shout "Down with Duvalier!" in order to pass. Smaller disturbances have also been reported from around the country, and have included the burning down of government buildings in Petit Goave, 40 miles south of the capital. These protests marked the beginning of the new academic term but they were a continuation of action that started last November when three students were shot and killed.

PROFILE

It may be mere coincidence that since George Walden's arrival at the Department of Education and Science two unusually direct initiatives have been taken in his line of responsibility. One sought to institute an international inquiry into the future of CERN, the European centre for nuclear research, while the other gave an unexpected indication of future funding plans for polytechnics and colleges.

Convention in Government circles gives little away about the inspiration for either, but both bear the mark of Mr. Walden's approach. The new what is known as a conviction politician. "One lesson I learned from my time in the diplomatic service is that if you want to sort something out, take responsibility for it and do it," he says.

After 20 years as a diplomat, he is under no illusions about the limitations of a junior minister's post. But it was to take direct control of decisions that he gave up an influential, comfortable and glamorous life in the Foreign Office, and he seems determined to make the most of it.

That is not to say that higher education is in for an easy ride. Mr Walden is firmly in the Sir Keith Joseph school of public spending, an admirer of the Prime Minister and on the right of the Conservative Party on most domestic policy questions. But he has the bureaucrat's inclination to seek workable solutions to problems, rather than adopting a reflex political stance.

He has no wish to change the central thrust of the Government's higher education policy, but he recognizes the areas of greatest potential difficulty and is prepared to act where a solution offers itself, as it did with CERN and the NAB. As a former Parliamentary Private Secretary to Sir Keith, he has been able to take an active role more quickly than most new ministers with the confidence of his secretary of state.

deny the validity of the policy," he insists. "The Government is accused on one hand of being philistine by the arts people, while on the other it is being accused of crushing science. That suggests to me that it must be getting something right."

"One thing that has struck me very forcibly since I have been here is the extraordinary change of climate that has occurred. There may have been great protest over the Green Paper and sometimes slightly pious noises about the humanities - which, surprisingly enough, I am not against and neither is Keith particularly as an arts graduate myself. But what is actually happening is that the policy is working."

He cites the dramatic increase in private funding in the universities, encouraging responses from higher education and industry to initiatives such as PICKUP, and continuing high student recruitment in the public sector as evidence of success. "There is rather an enjoyable contradiction in the view on the one hand that whatever is wrong with this country, it is not the universities and all they need is more money to be even better, while the same people are saying they have done all this and changed all that," he says.

"I would conclude that people are responding in the universities and the public sector. I think there is more realism."

The argument is that the cuts have been good for higher education, even if they have not been pleasant to endure. They have forced institutions to examine themselves and become more efficient and responsive. But Mr. Walden concedes that economies cannot go on being made indefinitely without serious damage being done.

"There are parts where the system is obviously beginning to creak," he says. "One sees on the ground areas where it would obviously be nice to have some more money."

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It was as well that he could, since CERN and the NAB in particular demanded immediate consideration. Indeed, his first month was quite like old times, as he shuttled between the European capitals, drumming up support for a new review of the nuclear laboratory. It was a time-consuming initiative which effectively prevented him getting to grips with most higher education issues before Christmas, but one which looks like bearing fruit. Some of his colleagues on the Council were pleased privately that Britain had taken a lead which their own political circumstances would not have allowed.

There was no way, either, of avoiding being plunged into choppy political waters at the NAB during a fortnight of his appointment. Mr Walden had to chair a stormy meeting of the NAB committee, whose members were angry about a series of rebuffs by Sir Keith. There were no immediate concessions, but this month's move to allow for more money should be available for the NAB's current planning exercise was welcome as it was unexpected. Whatever his role in inspiring the initiative, it was one strongly supported by Mr Walden, who acknowledged that continuing uncertainty would lead to unnecessary damage to polytechnics and colleges named on the sure lists which would never be implemented.

Now it is down to planning this year's White Paper on higher education, which may again call for a diplomat's skills if the poor reception accorded the Green Paper is not to be repeated. He agrees with Sir Keith that the tone of the document should be changed, but not the basic policies.

"I have yet to hear anyone seriously

However, having begun the regular round of ministerial visits, he is convinced that those in higher education have underestimated the success they have attained in adapting to more stringent requirements. "There has been an enormous effort, particularly in the polytechnics, where they have accommodated so many people," he said. "Don't let us talk down the achievements."

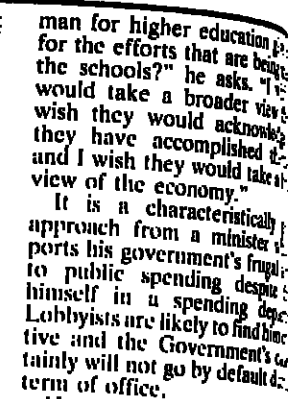
Although a minister for less than two months, Mr Walden is no stranger to the academic circles. He has personal experience of higher education in five countries and his wife, an art historian, has lectured in Britain and abroad. His own academic credentials are impressive indeed: a modest upbringing and state primary school in Dagenham, Essex, leading on to Latymer School ("in the times when it was open to ordinary kids with no money") and thence to Jesus College, Cambridge, to read languages.

After that came postgraduate study at Moscow University and the beginning of a distinguished career in the Foreign Office. That took him to Hong Kong University to study Chinese before taking up a post in Beijing at the height of the Cultural Revolution, and later to the prestigious Ecole Nationale d'Administration in Paris. Finally, after three arduous years as principal private secretary to successive Foreign Secretaries, he was rewarded with a sabbatical year at Harvard University, attached to the International Institute there.

Such varied experience of university life obviously gives Mr Walden a wide perspective on higher education, although nowhere was he involved in the administration. Each system has provided its own lessons. In the Soviet Union, for example, it was not to underestimate educational achievements or the supply of educated intelligence, in spite of the rigidity of the regime. He has written widely on the Soviet Union and plainly carries a grudging admiration for the country.

Memories of Chinese higher educa-

Memories of Chinese higher educa-



His immediate headache over- involves the sheer size of the state wards bill. International compar- of spending on science, for exam- ke no account of the fact that the Government now spends almost as much on student awards, he claims but the other side of his concern is that even this huge bill is not providing the intended level of service. The value of the mandatory grant is sliding down- wards after successive small cuts, and little progress is being made in attracting students from the less developed regions.

tion are more vivid and more disturbing. In Hong Kong there were riots as the Cultural Revolution got under way and in Peking the students were in full cry. "I shall never forget the sight of students in Peking universally tackling each other with home-made sticks, each claiming to be the true Maoists. I saw the stark horror of brute anti-intellectualism and I still remember the romanticism and the splendour of the British press, comparing some parts of the extremely ugly reality," he says.

Paris, the elite, intellectually, French, *le monde Normale d'Administration* could hardly have been any different. There the students were ranked from the top to the bottom on graduation and the future leaders of the French service were given positions in control of the institution for all its advantages, he concludes that the institution could not be transcended, but he retains admiration for the philosophy which allowed his contemporaries to slip in and out of the civil service at intervals during their careers.

Harvard was a different experience again, writing occasional speeches for Henry Kissinger and researching a book on morality in foreign affairs. It was "pure joy" after three years running the private offices of David Owen and then Lord Carrington and visiting 33 of 40 countries in the process.

It was this period, rather than the year's contemplation at Harvard which encouraged Mr. Snowden to go into politics. "I had been back over the country's problems, which I got a very clear view of abroad," he says.

"I saw that economic problems impinged on foreign affairs, grinding it down and making it more difficult to project the best case there is to offer, becomes very dispiriting."

"Particularly in the 1970s, the going was getting tough. People abroad noticed that, agreeable though it was to be a diplomat, there were very serious problems at home. I was encouraged when a Conservative gov-

He was impressed by Mrs Thandeniwa's handling of the grunting of indifference to Zimbabwe. It was too good, he says now, but the whole case demonstrated the value of sticking to a policy and not waiting for a compromise to emerge when none was likely to come. "Government had a lot to teach me, a lot about strategy," he adds. "Governments had a few years evading the problem and then they solved it. They liked having an opinion on it and they didn't

The break finally came in 1968 when he was chosen to fight Buckingham Palace for the Conservatives and had to resign from the diplomatic service. He then, he was back from Harrow and was the head of planning at the Foreign Office. I was not an easy decision, although the advantages for his wife and three children weighed in favour of it. Even now as a minister, he remains worried financially, having to pay his own way for the children's schooling. However, although he describes himself as "a realist about Whitehall matters", he has never regretted the change. He may have more influence in the Foreign Secretary's private office, but he wanted political control and the power to get things done. That may be limited at the moment but, at 66, he has time to move further up the ladder if he is a success at the DES.

He chose education as a specialism after the general election by opting to join the select committee on education, science and the arts. The invitation to become PPS to Sir Keith was long in coming and by the time a successor had to be found for Peter Brooke (on his promotion to a minister's post) Sir Keith was already in the Ministry. Sir Keith was one of the better-known backbenchers. His reputation was built more on speeches and articles on foreign affairs, but his grounding in education was sound.

Sir Keith will admit to no sense of downward coming to the DES after the glamour of the Foreign Office. The argument, he says, has increased its social activity at every phase of the life of the country. He is sharply critical of those in higher education who have the efforts made to raise standards in the schools, as well as in their own sector.

When did you last hear a spokes-

He seems genuinely undecided about the right course of action. His life is beyond the scope of the book, but he is attracted through college bureaucracy to the idea of a career which would further reduce the burden on the poor. On the other hand, he considers some reasonable since student life and its rewards lasting. "As you see the problems of a large population, for example, you feel that the thoughts go rather more into the hands of the students," he says.

With science and the issue is that much clearer, and the money is no more easily available to alleviate the difficulties.

Waiting to see the evidence for the Royal Society and the vice chamber before committing himself on the tent of the book.

attracted by the idea of different salaries as one contribution to retaining academics in key subjects. Other initiatives will also be considered. He insists "We are not saying 'What I dislike is this assumption'. Minds are made up and we know dogma which we are going to bust."

In the public sector, the NAHA is the main forum for dialogue. "Walden has no fears for its future as a result of recent clashes over teaching, training, architecture and the state of the advanced further education sector. I think it is a unique institution and it should be protected," he says. "We are having to make difficult decisions in higher education at a time of national constraints. Therefore, more discussions we can have with elected people and experts, the better. Inevitably there will be differences."

Mr Walden will not flinch from such clashes with the NAHA over the sector of higher education; he is likely to prove a tougher and less sympathetic minister than his three immediate predecessors. But he does not need to be convinced of the value of higher education or of the need to ensure that continuing cuts do not cause irreparable damage. The debate will be about where to draw the line.

Students usually study the classics of their discipline. Rembrandt and Van Gogh, Shakespeare and Wordsworth are offered as models of excellence. Daniel Newton and Lavoisier are familiar to scientists, and courses in the history of science are common. Engineers, however, have to make some effort to find their own classics. This raises several questions. Can we see technology as culture and a creative activity or is it merely applied technique? Perhaps it has a dual nature, like the difference between catering and cooking. If there are classics, then how do we distinguish them? Do we know what technology really is?

The question is whether there are engineering classics can be answered out of hand. The Spitfire and Mosquito, the Dakota and Concorde are often quoted as classic aircraft; classic cars such as the Ford Model T, the Silver Ghost or the Mini. Robert Stephenson's Britannia Bridge and the grand cantilever across the Forth come high among bridges. We cannot deny subjective response as evidence, but there is no shape or pattern to it. We are in the same state as indiscriminate collectors of data about railway engines — commonly known as "rivet counters". We must go to some better

analysis. Unfortunately technical understanding is uncommon in Britain. Technology is not part of our culture. We quickly see the political, social or economic aspects of a situation but never the technical. Consider David and Goliath, and how we are taught the theological explanation that God helped David. We ignore the obvious defeat the Big David. The only technical interpretation: a skilled shepherd boy like David's is lethal at 200 metres in the hands of a skilled shepherd boy: no sword ever killed anyone at that range. Social and economic historians always minimize the role of technology even when it gives the simplest explanation. They tell us, for instance, that electric light was introduced 50 years after Faraday because the growing cities created a demand for better light. Are they telling us that the ancient Romans would not have given their teeth, or at least their silver teeth, for electricity? Surely a cleaner answer is that the technology – the gas and dynamo and the incandescent light bulb – were not developed till then. Therefore we can study engineering classics, we have to be able to appreciate their role in the world. We have to accept that sometimes technology leads change. In May 1940, the German army did fail. In May 1940, too, during the four years of bloodshed did this. It was not the tank which did this, for Britain and France had more and better tanks than the Wehrmacht. It was the 20 mile-an-hour

army, the Panzer division, which carried its infantry, guns and supplies at the same speed as the tanks. The point is this: the Panzer division did not invent the tank, but in a sense, the tank invented the Panzer division. The Germans had the social organization which could use the new technology. We should remember this point as we wonder whether it is Britain or Japan which is best adapting to the new world of electronics.

Perhaps this view of technology in history gives us one measure of classics, as designs so radical that they change the whole game. The Warrior was like this. In 1860, an ironclad battleship so fast and powerful that it could have faced the rest of the world's navies. Yet Warrior merely introduced 20 years of confusion where mistakes in design, not obsolescence, forced each successive change. Thicker armour led to bigger guns, broadsides were compared with turrets, and the long range of sailing ships was set against the manoeuvrability of the coal-quizzing steamers.

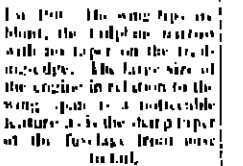
Some designs hint at desperation. Prussia's Uhlán was designed to charge its target with a dynamic ram while the crew sat docilely on a raft towed behind it, wondering if they might

the ship's gun to make another attempt. British ships, however, were not so lucky, a ship whose guns each weighed 80 tons, whose armour was of 24-in-thick iron, and which was still supposed to move under sail! The Russians tried out their circular Pupukva's — literally round battleships. It was 1880 before a classic design emerged and the British built whole classes of Admirals and Royal Sovereigns.

Which is the classic? Is Warrior one or is just a member of that "fleet of sails"? Perhaps the Admiral class gives us the more valid definition, as a definitive type which emerges from a period of confusion and unbalance.

We see a similar pattern elsewhere. Biplanes were structurally strong but could never fly at more than 250mph because of the drag from their struts and wires and fixed undercarriage. A new form appeared, the low wing monoplane with retractable undercarriage, and it was a 100 miles an hour faster. The Hurricane, Messerschmitt 109, Spitfire, Fockewulf 190 and Mustang were the classic fighters in that form. Alongside them, the ME 110 and Aeracobra are mere sports. There was a classic period of expensive motor cars too, Sunbeams and Bentleys, Hispano-Suizas, Isotta Fraschini and big Bugattis are members of a single species which became extinct in the early 1930s.

All these classics had a world, an ecology which suited them. The automobiles were suited to the roads, the submarines and aircraft carriers to the let-



Occasionally the engineer tells us how he thought it out. We have Smeaton's account of his water-wheel experiments in 1759 and Robert Stephenson's thoughts on iron bridges in the eighth *Encyclopaedia Britannica*. More often one traces their thought better by building models or drawing—sketching makes you look as no photographer could. For written accounts are not plentiful, and even few engineers wrote as Nasmyth did. Perhaps this is one reason why there are so many historians of science and so few of technology. There is, however, another reason which lies in the very heart of engineering.

propelled Messerschmitt 262 sounded the death of Mustangs and Spitfires. Yet we may say that these forms, like masterpieces written in a language we no longer speak.

There is a second way to look at engineering classics. They do not appear by some Marxian parthenogenesis out of the bowels of society. They are the result of the creative mind of individuals. The Diesel engine is a point on the graph of engine efficiencies but the continuation of that graph was not a necessary law of nature. When compression ratios went from 4.5 to 19 at a single bound it was the work of a remarkable individual, Randolph Diesel. Even within an established classical form, an individual designer like Bugatti puts into his cars some quality which is not to be found in any textbook.

My own preference is for this "creative mind" approach rather than the "landmark in history" since the latter is a misleading idea that proved to be off of the main line of development. The wooden Mosquito, Barnes Wallis's geodesic aeroplane structure and the clipship Cutty Sark were all on evolutionary branches which had no future, but they were nevertheless inspired designs.

We can examine the qualities of the creative engineering mind. We compare the steam engineers, Wankel and the piston engine designers, the painstaking experimenter, careful of every detail. He monitored each part of his engine.

from the pressure in the boiler and the cylinder to the vacuum in the condenser. I do not think that any human mind had previously had such insight into what it was making. With this clear illumination of the situation Watt was heartily scared of high pressure, and his engine had to be bulky and tied to a large water supply for cooling the condenser. The engine was inseparable from its masonry house, a chimney and could never be portable.

Compare Richard Trevithick, the Cornish Giant, with Watt: Trevithick was a different personality, a 19th-century romantic, a man of a larger scale. His engine was high pressure and dangerous. Trevithick was willing to cram on steam till the packings blew out of the joints. In some flash of inspiration, he built everything round the boiler: furnace and cylinder were inside it, the chimney, crank and flywheel all mounted on it. Powerful as Watt's, his was a more compact and portable. While many Watt engines stayed at home, wild Trevithick ventures adventuring among the silver mines of the Andes. Do we not gain a deeper insight into those two engines if we look at their inventors as well as at the laws of thermodynamics?

Even Watt and Trevithick are not more than names linked to popular misconceptions of the great caloric workman, Newcomen, and of Watt, who invented the steam engine; Trevithick is just a shadowy name. Every year a fair number of my engineering stu-



den's inform me that Robert Louis Stevenson built the Rocket.

Let me give a sadder example. All structural engineers agree that Stephenson's Britannia Bridge was a masterpiece, a true classic. It was damaged by fire in the early 1970s. The *Times* wrote: "To publish a letter suggesting that the bridge could be repaired; while at the very same moment there was a great fuss about a Titten in danger of being sold to the Americans. The Treasury found £2 million for the Titten which was neither part of our national heritage, nor in danger of destruction; but Britannia Bridge was cut up for scrap. There is a large fraternity who concern themselves with our culture, who set up a furnace if a sculpture is dropped in a gallery or one of 1,000 country houses is threatened. But we hold in contempt the Treasury's power which has provided with one comfortable living these last two centuries."

Engineering is not easy to grasp as culture. The concepts are beautiful but there has been too much rivet counting and too little interpretation. It is a problem which calls for thought and sympathetic understanding, not the mechanical provision of research grants. We need, like Diderot, "to change the common way of thinking."

Science is explicit; it does not exist until it is published. Technology does not exist until it is used. So we, as engineers, can write volumes about the VW Beetle or the Spitfire, just as you can about a Beethoven Symphony or a Rembrandt, without being sure that you have captured its essence.

It is not a question of numeracy, either. The medieval masons of Bourges cathedral and King's College chapel achieved that lightness, economy and power of conception without benefit of mathematics. The Turkish bow is another example of this "instinctive" engineering. It was a structure made from horn and sinew which totally changed its shape when it was strung, and could shoot an arrow more than twice as far as the English long bow.

Let us look back to the first tools, hand axes made three million years ago. Since their maker went upright, his hands and mouth were liberated. The mouth was freed from seizing food, and more free for words. The hands could now use tools. Yet this stage was reached before the modern brain evolved. Zinjanthropus had only the 500cc model compared with our 1.5 litres. As the brain grew to modern size, disproportionately large areas were dedicated to hand and mouth. We are well aware of the implications of this for our ability to use words and arguments; our education is based on one ability to use abstract thought and mathematical reasoning. But what about the hands?

We learn without words using our hands. We feel the uncertainty of structures which rock, and the strength of string when we pull but not when we push it. One experience is enough for us to know that one material is brittle and snaps while another is pliant. We know intuitively the difference in forces between a push and a blow. Yet all these wordless forms of knowledge are the essence of engineering, at least before the days of science.

There is a prima facie case for thinking that man is as naturally an engineer as he is a word user, and that the creativity of the engineer calls for a more significant place in our understanding of culture. However we choose our classics, we need to look at technology with the same eye that has hitherto been reserved for the so-called polite arts. Let our last classic, then, be the first—that primitive hand axe which initiated the whole story.

The author is principal lecturer at Sheffield City Polytechnic and honorary lecturer at the University of Sheffield.

Ernest Boyer

Back to school: an exercise in cooperation

"The high schools in this country are always at the mercy of the colleges," according to A. Bartlett Giamatti, the president of Yale University. "The colleges change their requirements and their admissions criteria, and the high schools are constantly trying to catch up with what the colleges don't think. When the colleges don't seem to know what they think over a period of time, it's no wonder that this oscillation takes place all the way through the system."

In the past, college presidents and deans have rarely talked to principals and district superintendents. Only infrequently have college faculty met with their counterparts in public education. The college curriculum, as President Giamatti observes, has been planned in isolation and high schools have been left with no clear sense of what higher education expects their graduates to know. After living for years in two separate worlds, American educators in schools and colleges are beginning to take notice of each other.

The roots of cooperation stretch to the early nineteenth century, when teacher-training institutions organized their own lower schools so prospective teachers would have a place to practice what they were learning. Those institutions felt a vested interest in early education that few college or university today recognize.

In 1900, the College Entrance Examination Board, a voluntary association of school and college officials, was organized to standardize the academic requirements or college, propose subject area tests in English, mathematics, and history and make more orderly the transition to post-secondary education.

In the 1950s, after the Soviets launched Sputnik, collaboration flourished once again, as new curricula in biology, physics, English, and mathematics were prepared. Schools and colleges together pushed for excellence in education.

During the 1960s, cooperation came to a screeching halt. Colleges and universities were caught up in the free speech movement, anti-war marches, sit-ins, teach-ins, and other protests over the invasion of Cambodia and the shootings at Kent State.

The civil rights movement pushed colleges to expand educational opportunities for members of minority groups and women, and school districts in America were preoccupied with compensatory education and the challenge of desegregation. Concerns about academic excellence, curriculum continuity, and school-college collaboration were neglected.

Today there are signs of reconciliation and renewal. Perhaps it took the shock treatment of having students come to college unprepared in the basic skills. Perhaps it was the loss of public confidence in education at all levels, or the falling off in enrolments may have forced higher education to recognize the schools. In any event, college and school educators are beginning to talk to one another. Collaborative programmes are cropping up from coast to coast.

One particularly intriguing project is known as Academic Alliances. This is a national effort to establish conversations among faculty in the same disciplines, regardless of their teaching levels. A pilot programme of 73 collaborative projects across the country includes more than 2,500 faculty from 120 colleges and universities, and from 300 schools.

Modelled after the county medical societies and bar associations, these partnerships bring school teachers and college professors together to keep each other up to date on recent professional developments and discuss



The outbreak of the Second World War brought an influx of academic scientists into Whitehall. Some, like Sir Henry Tizard, Patrick Blackett and Churchill's confidante, F. A. Lindemann (Lord Cherwell) already had experience in advising government on policy matters. Most did not, although their peculiar expertise as engineers or physicists made them natural recruits to the war effort in such fields as aircraft design, radar and nuclear fission.

As an anatomist, whose main professional concern up to that time had been with apes, Solly Zuckerman would at first sight appear an unlikely member of this band. His initial assignment was modest: to investigate the effects of exposure to German bomb blasts. This involved, among other things, experimental work on animals and reconstructing what exactly happened when people were wounded or killed in air raids. The results, it turned out, were not at all what had been supposed, which naturally led him on to draw conclusions about the relative effectiveness of different types of bomb and bombing policy.

Since this was an essentially new kind of warfare, and one in the employment of which the Allies were soon to surpass the Axis, his findings proved to be of more interest to those planning the air offensive against Germany than to the civil defence authorities. He thus soon found himself welcomed into the highest policy-making circles and in due course embroiled in the controversies associated with strategic bombing and Allied operational planning generally.

This story, including his subsequent role as scientific director in charge of drawing up the British Bombing Survey Report, is vividly told in *From Apes to Warlords: The Autobiography (1904-1946)* of Solly Zuckerman (Hamish Hamilton, 1978).

This account is largely based on papers now deposited in the University of East Anglia Library. They include, besides his voluminous correspondence and memoranda, a vast collection of material (including successive drafts of the air plan for the invasion of France) which came his way during the latter phases of the war.

Among the "Overlord" papers, for example, is a characteristically blood-thirsty memorandum from the Special Operations Executive giving as its first task:

(a) The murder of important German railway officials... The names, addresses and functions of about 350 important German railway officials stationed at the main HQ towns in NORTH FRANCE and BELGIUM are known to us and the names and addresses of others are no doubt known to the local resistance groups.

Whether, and if so how successfully, the operation was carried out, the papers do not reveal. The books that have been written about the SOE tell of many hair-raising escapades, but not about this one.

With the ending of hostilities Zuckerman returned to academic life as Sands Cox professor of anatomy at the University of Birmingham, a post he was to hold until 1968. But although Birmingham provided him with a base, he continued to spend much of his time on Whitehall committees, advising successive governments on a wide range of activities which, over the years, embraced virtually every aspect of scientific policy making.

Simply listing his affiliations takes up the better part of a column of *Who's Who*. Among his initial concerns were scientific manpower, natural resources, toxic substances, environmental pollution and the organization and management of government research and development. During the 1960s he was once again involved in his role as chief scientific adviser to the Ministry of Defence and later as chief scientific adviser to the Government. From 1970 until 1974 he served on the Royal Commission on Environmental Pollution. He was knighted in 1956, awarded the Order of Merit in 1968 and created a life peer in 1971.

The papers deriving from these latter parts of his public career are even more voluminous, and though they do not include any official documents that relate to his posts as chief scientific adviser during the 1960s, they take up some 500 feet of library shelving and give a remarkable overall view of the development of British science during the post-war years.

They are arranged according to topic (eg "Committee on Manpower Resources", "UN Scientific Conference on Conservation", "Royal Commis-



Solly Zuckerman in 1950

Memoirs of a power-broker



The politics of science: Howard Temperley explores the Solly Zuckerman archive at UEA

sion on Environmental Pollution", "Zoological Society", etc). To date the wartime material and the greater part of that dealing with science policy up to about 1960 has been catalogued and subject-indexed. The remainder has been sorted and listing is in progress.

Unlike the personal papers of politicians and others close to the sources of power, the archive contains relatively few quotable nuggets. Neither he, nor his immediate associates, were given to gossip or hyperbole - or if they were, reserved it for other occasions. Thus we are not told what they thought of their political masters or even of one another except as suitable candidates for membership of this or that committee.

What does emerge is that they saw themselves as being very much at the centre of things, applying analytical and quantitative methods to peace-time problems in very much the same way that they had done during the war. One, indeed, followed on very much from the other: "Thank for your letter," writes Tizard in 1947. "What I should like is for you to give me a list of the best 20 or 30 men who were engaged in operational research during the war and are now no longer in government employment."

The increasing centralization of scientific planning during these years is evident from the personal correspondence he received. Particularly after his appointment as chairman of the committee on the management and control of research and development and later as scientific supremo during the Wilson years he was inundated with demands from every conceivable quarter. Biology was not receiving adequate support and important new developments were not being followed up. But the same, it transpired, was also the case with engineering, physics and chemistry. Too much money was

going to government research establishments and not enough to the universities. Nevertheless there were many overlapping projects. The undertakings were unable to raise funds required; those already underway were being allowed to continue even though developments elsewhere had cast doubt on their usefulness. Many British scientists were taking jobs abroad.

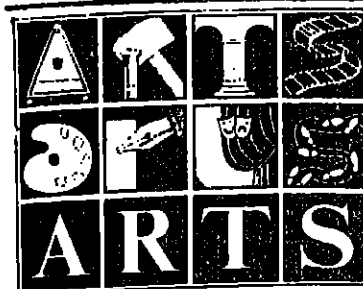
Making a coherent whole out of many conflicting demands was plain, not easy. What is clear is that, however he regarded himself, Zuckerman was perceived by the scientific community at large as a power-broker, able to bring pressure to bear through a many committees on which he sat to advance or retard developments.

Nor, as a letter from Lord Montagu reveals, were scientists the only ones who saw him in this light. Although it came too late to affect the role of the Duke of Devonshire and Lord Bess of New York, it had found much that was far from pleasant.

What was quite different from the usual level at which it was carried out, the organizational complexity of the work required. By far the greater part of the collection consists of reports, memoranda and draft reports, the usually heavily annotated.

These reports have been published in the past, but the man behind them has not been remembered for his part in the story. It is certainly one of the great strengths of the collection that it has been made public. Given the enormous and extraordinary *United States* I-V, and Dan Reeve's Vietnam memory exercise *Smothering Dreams*, Channel 4 broke new ground last

The author is professor of American history at the University of East Anglia.



Events

Continuing exhibitions:

To February 14. North Staffordshire Polytechnic. *A Panoramic View* by Michael Westmoreland: giant panoramic colour photographs.

To February 15. Glynn Vivian Art Gallery, Swansea. *Personal Choice*: a celebration of 20th-century photography. To February 15. University of Nottingham. *Francis and Wyld*: an exhibition placing the Nottingham-born artist Richard Parkes Bonington in the context of his Anglo-French contemporaries.

To February 21. Hatton Gallery, University of Newcastle. *Artists in the Theatre*: stage design by Kandinsky, Kokosika, Cocteau, Léger.

To February 22. John Hansard Gallery, University of Southampton. *Between Dark and Dark*: Thomas Joshua Cooper photographic works 1970-85.

To February 23. Scottish National Gallery of Modern Art, Edinburgh. *American Images: from humanism to formalism*. American photography 1945-80.

To February 23. Darkroom, Cambridge. *Fen Archive 1850-1950*: a retrospective exhibition of photographs from the Cambridgeshire fens, featuring the work of five photographers.

To March 2. University of East Anglia. *Icon and Revolution*: political and social themes in German art 1918-33.

To March 8. Museum and Art Gallery, Warrington. *Solomon: a family of painters*. The work of three Victorian painters, Abraham, Rebecca and Simeon Solomon.

To March 24. Collins Galleries, University of Strathclyde. *The Decoration of the Sarrum Villa 1880-1940*.

Concerts:

February 17. Chapel, University of Keele. London Sinfonietta: works by Takemitsu, Birtwistle, and Weill.

February 18. Great Hall, University of Exeter. Alfred Brendel (piano): Liszt centenary concert.

February 18. University of Essex. Bernard d'Ascoli (piano): programme includes Mozart, Liszt and Brahms.

February 18. Fifth Hall, University of Sheffield. *Gothic Voices*: music from the time of Joan of Arc.

February 19. Department of Music, University of Manchester. Martin Best (tenor), with lute, psaltery and guitar: a concert of medieval France.

February 20. The Diamond, University of Ulster. Ulster Orchestra conducted by Christopher Seaman with Arve Tellefsen (violin). Programme includes Brahms's Violin Concerto.

February 21. Assembly Hall, University of Strathclyde. University Chorus, Wind Ensemble and Chamber Orchestra. Programme includes Brahms's *Barber of Seville*.

February 22. Great Hall, University of Nottingham. University singers, "Songs of Sadness and Prayer", choral and instrumental music.

Ghosts in the Machine Channel 4, Tuesdays

It all began without preamble and there hasn't been much since in the way of explanation or continuity. The east-end-style opening credits may have put off all but the more hardcore cineastes (who anyway refused to believe that unconvincedly softened good-night voice and stay tuned, convinced they're about to get a party going, just as soon as we're all asleep).

It began, perhaps fittingly, with the once notorious (now rather tame) Nam June Paik sitting at a piano. After a moment or two knuckle-flexing, a noisy block chord, played with the foreboding. This - from the man best remembered for lopping off John Cage's tie - may or less set the tone for the series. Given that the advance publicity had made video seem the very crest of the nouvelle vague and the in-breath of the dernier cri, it all seemed passé.

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Planning some good nights out

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BOOKS

PHILOSOPHY

A man of principles

John Stuart Mill's *On Liberty*

by John C. Rees

Clarendon Press: Oxford University Press, £19.50

ISBN 0 19 824786-4

Mill

by William Thomas

Clarendon Press, £8.95 and £2.25

ISBN 0 19 825205-5 and 827521-3

There can be few philosophers whose

works are as widely read, as universal

admired and as hotly debated as are

the works of John Stuart Mill. Mill's

Utilitarianism is a standard text for

undergraduate students of philosophy,

and his essay *On Liberty* is a standard

text for undergraduate students of

politics.

Those reading philosophy and politics

in combination are thus twice

blessed. They are also, however, twice

cursed, for the principle of utility, that

"actions are right in proportion as they

tend to promote happiness" fits un-

usually with the "simple principle" of

On Liberty, the principle that we are

not justified in interfering with an

individual's actions if they are not

harming others. The problem is that

where the first principle implicitly

licenses paternalism in cases where

paternalistic action will lead to an

increase in happiness, the latter principle

explicitly forbids paternalism and

considers it to be simply unjustifiable

busybodying. The discrepancy be-

tween the doctrines of *Utilitarianism*and of *On Liberty* have prompted

some commentators to speak of "two

Mills" and to construe Mill's personal

circumstances – his early "mental

crisis", his break with the Benthamites,

and his relationship with a married

woman, Harriet Taylor – as influen-

cing him to reject almost entirely his

Utilitarian origins.

John C. Rees's book is a scholarly

study of Mill's *On Liberty*. Rees

considers the problem of "two Mills"

against a background of detailed his-

torical and textual analysis. He pre-

sents powerful arguments both against

those who see Mill's work as a seamless

web and against those who detect in *On Liberty* a total rejection of earlier influences. The truth, according to Rees, is that there is only one Mill, struggling (sometimes unsuccessfully) to reconcile the major tenets of his early Utilitarian teaching with a profound belief in liberty as a good in itself and as a necessary component of happiness. As history of political thought the work is exemplary. Rees is always sympathetic to his subject, yet never blind to the problems inherent in his texts. Indeed, he emphasizes the necessity of moving from textual analysis to philosophical inquiry, and in chapter five turns his attention to the coherence of Mill's harm principle.

Mill's "simple principle", the principle of *On Liberty*, assumes a distinction between actions which do and actions which do not affect others, but it is argued by Mill's critics that all actions have social consequences and that there is no class of wholly "self-regarding" actions. Against such critics Rees insists that Mill's real intention was to differentiate between actions which do and actions which do not affect others' interests. Here, a genuine difference can be discerned, for even if it is true that all my actions have social consequences, it does not follow that they all affect the interests of other people. This re-reading of Mill, here reprinted from a well-known journal article, constitutes Rees's major contribution to the scholarly literature and again highlights his sympathetic yet critical approach to his task.

Sadly, John Rees died before completing his book and the text has been compiled by Geraint Williams, using published and unpublished manuscripts. Despite that fact, the book reads fluently and as a book, not as a random collection of articles. The new material is characteristically stimulating and the reprinted work constitutes a poignant reminder of what the world of political theory has lost.

William Thomas shares Rees's concern with the problem of "two Mills", but his book is aimed at a rather different audience. Where Rees's book is a substantial and scholarly analysis of one text and is aimed at the

informed reader, Thomas's book is a short survey of the whole of Mill's philosophy and is aimed at the beginning student or interested lay reader. Moreover, where Rees writes as a political theorist and philosopher, Thomas writes as a historian. Understandably, then, Thomas's book contains little of the subtlety or philosophical sophistication which is a hallmark of Rees's work. However, there is much stimulating material both for the beginning student and the Mill scholar.

Thomas's claim to novelty lies in his thesis that Mill never deserted principles he learned from his father and that Mill's later works were expansion, not a rejection of his father's. Here there is emphasis on one Mill. Where the doctrines are changed, this is analogous to change from caterpillar to butterfly, and Thomas appeals to Mill's statement of his intellectual development in the *Autobiography* to the claim that Mill's early education was never forgotten, much less, done. The thesis is a bold, thought-provoking one, but then, not in a book of this sort, sort, out a full case for it. For example, puzzling to find Thomas claiming that Mill never departed from these teachings of his father and that his father caused him to "revert to his conception of social justice." Why these two claims can be made compatible, but Thomas needs more space to do it. Moreover, his consideration of Harriet's influence is so all-pervasive is highly debatable, as is convincingly argued in chapter 6 of Rees's book.

Nevertheless, as an introductory piece on Mill, the book has great merit. It contains a wealth of useful information about Mill's life and contemporaries, and Thomas's essay on the social and political history of the period, which is so often ignored, is which is so crucial to a full understanding of Mill's thought.

Susan Mendus

Susan Mendus is lecturer in philosophy at the University of York.

Being a Socratic

The *Dialogues of Plato* volume one: *Euthyphro, Apology, Crito, Meno, Gorgias, Menaxenus* translated with analysis by R. E. Allen Yale University Press, £30.00 ISBN 0 300 03226 9

Great philosophers and great literary artists can do things with words that the words never knew they could do. Plato is a sublime example of both, and few prose writers are harder to translate. That may be why nobody since Jowett has had the temerity to try turning the whole corpus into English single-handed. But Allen is making the attempt: here is his first volume.

To be useful as a lasting resource, a new English Plato must pass two tests. It must be philologically as accurate as possible, and it must be readable; that is, it must be reasonably idiomatic, and avoid blatant stylistic eccentricity. The barbarous artificial Platonesque of some allegedly "literal" modern versions, or of those offering a Plato filtered through some fashionable "ism", may be tolerated for special purposes, but a complete Plato so presented would be a thing of horror.

Allen's translations are accurate and readable: they pass the tests admirably. My only criticism is that their sober tone lacks some of Plato's sparkle. Allen's Socrates talks to his friends as if to learned colleagues over the port, and scolds his opponents like a tutor reproving pupils who prefer football to philosophy. But the fault may be forgiven: it is far better than embarrassing attempts at folksy colloquialism. The translations should wear

The book begins with an introduction to Plato's work, concentrating on the order and date of the dialogues. Allen's account of the state of the art on this matter is clear and well judged. He then introduces each dialogue with a substantial essay, designed, he tells us, mainly to remove obstacles from the reader's path. But this modest project blossoms into something altogether richer. The reader may be surprised by the absence of some features prominent in modern com-

mentaries. Allen offers no close philosophical analysis, and no logical analysis and criticism. In Socratic argument, nor does he expound on the subtleties of the dialogues. In depth what is being a Socratic involves. His discussions are lucid, philosophically perceptive, and infused with a sense of the seriousness of the task at stake – something seldom apparent in writings that concentrate on a formal dismemberment of argument. Philosophy is a matter of argument, and it is also within its brief to explore the anatomy of beliefs and the consequences of commitment to the analysis of Socratic argument, which cannot often claim more than "academic" significance. Allen's culation of what it would be to be a Socrates says we should yield to the deserving the attention of argument, prepared to think about the conditions of his life.

The dialogues collected here are early and early-ish: *Euthyphro, Apology, Crito, Meno, Gorgias, Menaxenus* – nicely chosen for the introductory related themes. With one exception, Allen's introductions will generally deepen our understanding of accounts of Socratic rhetoric in *Apology*, of the duty of obedience in *Crito*, and of the *Menexenus* have outstanding merit. Only his *Gorgias* disappoints. He recognizes its pivotal status, and his discussion becomes thin and tentative in its later phases, after *Politicus* reflections on the opening conversation. The explanation may lie in the odd refusal to take seriously the powerful and complex challenge of Callicles both to Socrates' moral beliefs and to his philosophical project. Allen's offhand dismissal of Callicles (though he reckons him a better sophist than Nietzsche) seriously distorts his perspective on the Socratic work that the dialogue does.

But I must not end on a sour note. The volume deserves to be welcomed and widely used: I look forward enthusiastically to its successors.

Andrew Barker

Dr Barker is lecturer in philosophy at the University of Warwick.

BOOKS

PHILOSOPHY

In and out of politics

The Collected Papers of Bertrand Russell

volume twelve: *Contemplation and Action 1902-14*

edited by Richard A. Rempel, Andrew Brink and Margaret Moran

Allen & Unwin, £48.00

ISBN 0 04 920078 X

The title of this, the latest volume of

Russell's papers to appear from

McMaster University, gives an accurate

forecast of the contents. "Con-

templation and Action, 1902-1914" is

indeed what they are about; as always,

they show Russell torn between the

demands of the liberal political world

into which he had been born and a

revision against every aspect of

everyday life which drove him to take

refuge in a romantic, self-absorbed

mysticism.

The extraordinary split between

these two sides of Russell's nature is

displayed here almost more vividly

than in anything else he wrote. On the

one hand, we have the unpublished

Prison which he wrote in 1911, for the

benefit of Lady Ottoline Morrell and

Mrs Whitehead, full of a somewhat

sentimental yearning for a mystical

communion with the Good; on the

other, we have the brisk, sensible,

acute and witty essays on the merits of

free trade and the demerits of protec-

tionism which were Russell's contribu-

tion to the 1914 controversy over

so-called tariff reform. How the

same man could have written both is as

mysterious as ever.

The Bertrand Russell Archive has,

as before, yielded some interesting

unpublished material. In particular,

there is a journal from 1902-5 which

casts a decidedly grim light on Rus-

sell's private life and on his frame of

mind at the time. And as usual,

Russell's account of his life and ideas

produces a far more interesting effect

in May 1903: "I have certainly effected

a great moral improvement in her, and

that depends upon keeping her hopes

alive but unfulfilled. This requires

vacillation – occasional great friendli-

ness, occasional censure. And this I

do. But heaven knows it is difficult;

and it absorbs my best energies in an

inconceivable degree." It is hardly sur-

prising to find him complaining that

Mary Murray "thinks I am inhuman".

It is rather the impression anyone might

form. But a year later he admits, "This

journal gives an unduly bad view of

Alys", and acknowledges her courage

and energy and kindness. The combi-

nation of deeply unbelievable religiosity

and extended narcissism is ex-

ceedingly depressing.

But he was, after all, miserable

about the failure of his marriage, about

the obduracy of the logical problems

he was wrestling with, and about the

political climate of the last years of

Balfour's government. And none of us

is at our best when writing for the

confessional; as Hobbes had observed

two centuries before, most of us de-

pend on the public world to keep us

sane – and Russell was sane enough to

keep most of his mystical reflections to

himself, and to repent in later life of

the florid sentimentality of *Mysticism*and *Logic*. The editors' introduction is

a model of tact and discreetly con-

veyed information, and while being

more tender to Russell than some of his

might be, it also pulls us back to the

public world of those years.

Russell was – and in most ways

remained – a reforming liberal of an

Anglo-Irish and Lloyd George stripe.

That is, he was not a socialist, did not

think that the Labour movement

should take a politically independent

line – the condemned German

social democrats for going down that

path in the first book he ever wrote;

what he wanted was a welfare, feminist

government which would maintain

free trade, and would attack the forces

of monopoly. What this meant was

that Russell was a great enthusiast for

the taxation of increases in the value of

land – the unearned increment pro-

posed by landlords seemed to him the

paradigm case of social parasitism, and

all his life he was inclined to think that

Henry George's attack on monopoly,

and particularly the monopoly of the

landlord, was superior to most of

Marx's economic criticism. Russell's

views on this are largely unknown,

because the one occasion on which he

had to spell them out in any detail was

when he was (unsuccessfully) seeking

the liberal candidacy for Bedford in

1910. On free trade, his views were the

classical, orthodox views which later

generations learned from Alfred Mar-

shall; but Russell's exposition of them

in articles in *The Edinburgh* and *The**Contemporary Review* was wonder-

fully clear and energetic and widely

welcomed by the free trade camp.

On the question of votes for women,

he was more nearly out on his own.

He stood as the suffragist candidate for

Wimbledon in 1907 – the local Liberals

had decided not to fight the safest Tory

seat in the country, but Russell ran as

the candidate of the National Union of

Women's Suffrage Societies, in the

expectation that he would pick up such

Liberal votes as were going. On his

own behalf, in fact, he campaigned for

free trade and the taxation of land

values – but put votes for women at

the head of the list. On evidential

grounds, he opposed the extension of

the suffragettes, and tried to persuade

suffragists to join forces with the

People's Suffrage Federation which

was campaigning for votes at 21 for all

adults alike.

The "extremist" Russell who was as

ready as the next woman to go to jail

for his principles didn't emerge until

the outbreak of national madness in

1914. That side of Russell will emerge

when we get to volume 13; in the

meantime, this volume, lavishly foot-

noted, elegantly produced, and a plea-

sure to read, is a real treat for anyone

interested in Russell or in that strange

and remote country – Edwardian Eng-

land.

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BOOKS

PHILOSOPHY

Humean views

Ayer
by John Foster
Routledge & Kegan Paul, £21.00
ISBN 0 7102 0602 X

Apart from Anthony Quinton's survey of A. J. Ayer's views on perception in *The Nature of Things*, there has until now been no general summary of Ayer's philosophy. John Foster has now provided such an account which will be valuable in grasping and teaching the development of recent analytic philosophy. For Ayer has made a long and distinguished contribution to that development. He is still popularly regarded as the embodiment of logical positivism, with its verificationism and its revolutionary rejection of metaphysics, even though he has modified or disavowed some of the views of his *Language, Truth, and Logic*.

Foster's approach combines admiration for Ayer's philosophical technique with criticism, and often rejection, of Ayer's ideas. He divides his account into three parts, dealing first with *Language, Truth, and Logic*, second with issues of scepticism and knowledge, and finally with the problems of induction, causality, mind, and free will. Though the first section represents a determinate chronological phase in Ayer's development, the account generally examines the topics, and the complex arguments about them, rather than their development. The book meets, in its attention to detailed argument, the highest standards of the "Arguments of the Philosophers" series to which it belongs.

The discussion of logical positivism concentrates on the verification criterion for meaning, but includes also reductionism and Ayer's early account of moral judgement. Foster notes, and discards, some of the feeble but still popular objections to the verification criterion, and attempts to formalise objections to Ayer's account which stem mainly from Church's proof. Though he omits some notable contributors to the debate, such as Niddich and Makinson, he gives a thorough and valuable guide to these technical difficulties. He argues that the principle is ambiguous, but should be rejected whether it is construed as an "evidence-principle" or as a "content-principle".

In part two Foster discusses Ayer's analysis of "A knows that p" in terms of p's being true, and A's being sure, and having the right to be sure, that p. As in the discussion of verification he gives a useful survey of the problems in this analysis, culminating in an account of the well-known Gettier-type examples. In general what he demonstrates is the extreme unclarity of the central phrases in the explication, and yet sometimes a questionable account of them is endorsed. For example, in a case where A knows of strong scientific evidence for p but believes p on quite other grounds, viz religious authority, Foster says that A "has the right to be sure" that p, is "not justified in being sure" that p. It might be said, however, that such a person has available evidence which would give him the right to be sure, but disregards it and so does not have the right.

In the formal discussion of knowledge Foster worries away at the sceptic's quest for infallibility without ever getting quite clear why we should admit such a stringent requirement, but it also usefully prefaces a discussion of scepticism. Foster follows Ayer in formulating a general Humean sceptical argument which can be applied to a wide variety of topics such as the past, physical objects, other minds, and induction. He concentrates in part two on perception and physical objects in the account of Ayer's phenomenalism, and on the problems of induction and natural necessity in part three. He outlines the four responses to scepticism which Ayer considers, namely naive realism, reductionism, a scientific approach, and descriptive analysis. He notes that different responses may be appropriate to different cases, but considers reductionism most extensively in this context. The discussion is again valuable, but readers may



A. J. Ayer

be confused by some unclarity in the accounts of Ayer's phenomenalism in parts one and two. In part two "analytic phenomenalism" is defined in terms stronger than mere equivalence between sense-datum statements and physical object statements, and Ayer is said to accept this version in *Language, Truth, and Logic*. But in the earlier discussion he speaks of Ayer's "linguistic phenomenalism" in terms of equivalence.

In the final section Foster tackles Ayer's Humean accounts of induction, causality and personal identity. More briefly he discusses the free will problem, though here the similarity between Ayer and Hume is not stressed. In this section Foster commits himself more explicitly than before to anti-realism. In this section Foster's own position is open to criticism: It remains unclear, for example, how the claim that some propositions express a natural necessity has a genuine explanatory force; and why he seems to assume that objections to his view must rest on the previously discredited verification principle.

These final topics reinforce Ayer's affinity with Hume. In one way, however, this indicates a gap in Foster's treatment. For both Ayer and Foster are traditional philosophers in believing that the identified traditional problems about knowledge, induction, etc. are genuine and call for a straightforward solution. Disagreement between them arises only from the fact that while Ayer endorses Humean views Foster prefers Berkeley or Descartes. The success of the discussion testifies to the value of a strategy in which an opponent, rather than a disciple, examines a philosopher's work. But because both philosophers are in this way traditionalists, the book lacks any reference to the more revolutionary thinkers in recent philosophy who would also criticize or reject Ayer's views. In this respect, despite the revolutionary sentiments of Ayer's positivism, philosophers like Austin or Wittgenstein, not mentioned in the book, appear far more revolutionary, far less traditional, than either Ayer or Foster. Perhaps this accounts for the lack of any reference to Austin's criticisms of Ayer's phenomenalism, or of the traditional search for knowledge, or to Wittgenstein's Kantian treatment of both realism and idealism as equally wrong, or even to Quine's criticisms of traditional empiricism. What these gaps reveal is the narrow band of issues in the traditional repertoire in which Ayer has been interested. Foster's book shows also the subtlety and precision of much of the thinking undertaken within that band.

Graham Bird

Graham Bird is professor of philosophy at the University of Manchester.

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BOOKS

PHILOSOPHY

Interplay of ideas

Philosophy, Its History and Historiography
edited by A. J. Holland
D. Reidel, £37.50
ISBN 90 277 1945 4

In the last decade or so there has been something of a revolution in the history of philosophy, characterized above all by a determination to restore a genuinely historical dimension to the subject. Too often in the past, "analytic" philosophers have been content simply to fish out some argument from the works of one of the great masters, plunk it on the dissecting slab, and proceed loftily and complacently to analyse its "logical structure" as if from some timeless, ahistorical perspective. A major theme of this collection (based on material delivered at the Royal Institute of Philosophy's 1983 conference on "Philosophy and its History") is that the proper understanding of a philosophical text requires a detailed grasp of the intellectual climate in which its author lived and worked.

Central to the new approach is what may be called an "interactionist" outlook — an insistence that earlier sys-

tems of thought did not operate in the tightly separated compartments we now call "science", "theology" and "philosophy", but were the product of a complex interplay of ideas, often mediated by political factors. This is one of the conclusions to emerge in Desmond Clarke's interesting survey of Cartesian thought in late 17th-century France; and the same theme is also at work in G. MacDonald Ross's "Occultism and Philosophy", which argues that the 17th-century climate was such as to preclude our drawing a clear demarcation line between philosophy and science on the one hand and occultist ideas on the other. Many of Ross's examples are deliberately provocative — he presents Descartes's *Cogito* as an example of "occultist mysticism" — and it is a pity, from the point of view of the volume's balance, that his fellow-symposiast Simon Shaffer, finds nothing to challenge here.

Another recurring topic in these essays is the danger of falling prey to caricatures and misleading generalizations which all too easily become entrenched when the history of philosophy is taught in terms of oversimplified "schools" of thought. Richard Franke's, in his paper on "The Case of Spinoza", suggests that our common stereotype of "rationalist philosophy" as involving a wholly aprioristic conception of knowledge can lead to serious misunderstandings when applied to Spinoza; and Stuart Brown, in a useful study of "Leibniz's break with Cartesian rationalism", rescues Leibniz from similar distortions.

The volume is divided into three sections of which the largest is devoted to the 17th century. This section, in addition to the papers already noted,

contains a clear account by Gary Hatfield of how Descartes's conception of matter diverged from that of the scholastics, and a vigorous contribution by Edwin McCann to the continuing debate over whether Locke was a consistent supporter of the "Mechanical Philosophy" espoused by Giordano Bruno and others. A separate section on the 18th century includes work on Hume and Kant (by Nicholas Capaldi and Eckart Förster, respectively) and an essay by P. B. Wood on "Hume's Reid as seen through the eyes of his eulogist Dugald Stewart". The section opens with a richly detailed piece by M. A. Stewart on "Hume's *Dialogues concerning Natural Religion* which does much to show how our understanding of that often confusing text may be enhanced by proper attention to its historical context.

The historiographical issues referred to in the title are explicitly addressed in the opening section of the volume, where Jonathan Rée begins by arguing, originally and persuasively, that our conception of what philosophy is, as a discipline, is strongly influenced by a succession of "integral histories" whereby the philosophies of the past are defined as inherently unsound. If it is indeed characteristic of the subject that we know as philosophy that each new movement should herald its arrival by systematically caricaturing and denigrating the work of its predecessors, then it is no wonder that the history of philosophy has to fight to free itself from distorting stereotypes. There is much food for thought here; and appropriately enough, the remaining essays in this section (by M. R. Ayers, Mary Hesse and Philip Pettit) are devoted to assessing one particularly influential "integral history" that presented by Richard Rorty in his book *Philosophy and the Mirror of Nature* (where the bulk of post-Cartesian philosophy is condemned as being engaged on a misguided quest to establish supposedly absolute and universal foundations for knowledge).

This is a rewarding volume which bears witness to the healthy state in which the history of philosophy at present finds itself.

John Cottingham
Dr Cottingham is lecturer in philosophy at the University of Reading.

John R. Searle's *Expression and Meaning: studies in the theory of speech acts* was first published in 1979. It is now available for the first time in paperback, published by Cambridge University Press at £7.95.

Frames of mind

Postures of the Mind: essays on mind and morals
by Annette Baier
Methuen, £16.95 and £6.95
ISBN 0 416 39620 8 and 39630 5

Annette Baier's collection of essays is an interesting manifestation of the impact of Wittgenstein on a philosopher brought up on a mixture of Kant and British empiricism. Her early philosophical training generated a certain conception of what a philosophical problem was, how it could be tackled, and what counted as a possible solution. Reading Wittgenstein's *Philosophical Investigations* then produced in her thinking a Kuhnian revolution that left her initially "bewildered" and "paralysed". Eventually, she was able to internalize the new Wittgensteinian paradigm, and the essays here collected have all been written under that impulse.

The influence of Wittgenstein is more marked in the first part of the book, which deals principally with the philosophy of mind. It manifests itself in Baier's resistance to attempts to explain the social in terms of the individual, the public in terms of the private, the complex in terms of the simple. These themes are perhaps revealed most clearly in the paper "Intention, Practical Knowledge and Representation". Baier there argues that writers like Danto and Goldman have reversed the proper order of understanding in their writings on intention. They start with a very impoverished notion of a basic action, such as they try to explain richer notions such as writing one's name, signing a cheque, setting an account, and so on. Baier suggests on the contrary that if we want to use the notion of a basic action at all, it is to actions which are already rich in social texture that we should turn.

If Wittgenstein is the eminence grise of the first part of the book, it is the second. Some of the essays there are largely of an apologetic kind. One, for example, explores what Hume means by "the moral point of view"; another considers how promises give rise to obligations by comparing the views of Hume, Anscombe and Cavell. Other essays develop a more critical stance towards contemporary moral philosophy. Baier is systematically hostile to the Kantian idea that a moral theory must take the form of a set of explicit, universal, sanction-backed rules which can be displayed as a rational system. Once again, Hume is invoked as

providing us with an alternative understanding of morality, an understanding one of whose chief merits, in her eyes, is its heavy reliance on empirical facts, about human nature and the working of human institutions.

Baier is a suggestive rather than a persuasive writer. In keeping with her general thesis that the role of reason in human life has been exaggerated, there is relatively little in the way of detailed argumentation for finely discriminated theses. The consequence is that although she is able to produce some interesting ideas, she is unable to mount coherent defences of them. Throughout the first part of the book, for example, there is a repeated failure to distinguish between causal and logical dependence, where this stems not from any Quinean scruples about the distinction between the contributions of fact and meaning, but simply from a failure ever to address the question of whether there is an important distinction here. Thus, we find advanced without any defence the view that science is essentially a social activity, that persons are essentially beings with "successive periods of infancy, childhood and youth" and are essentially "helps to other persons who formed and cared for them", and that the ability to change one's mind "rests upon membership in a community". No doubt what lies behind these and many other similar claims is some version (or versions) of Wittgenstein's anti-private language argument. But since Baier never tries to provide a detailed and explicit line of argument from plausible premises to these very strong conclusions about persons and their activities, the judgement on her claims must be at best "not proven".

Baier is also sometimes significantly inaccurate in her characterization of various philosophical positions. It is, for example, a clear misunderstanding of Strawson's M and P predicates to equate them with corporeal and psychological predicates. Again, she speaks as if current orthodoxy in the philosophy of mind holds that single beliefs can be profitably studied in isolation as separate mental items. In fact the reigning orthodoxy, as least as represented by writers like Davidson, Dennett and Fodor (who remarkably is not even mentioned in the book), has been for the last fifteen years at least that mental states can most profitably be studied only in clusters.

The achievement of the book therefore is uneven. As a collection of occasional insights and illuminations, stylishly written, it can be commended. But the hard groundwork of detailed argumentation is here left unperformed.

Nicholas Everitt

Nicholas Everitt is lecturer in philosophy at the University of East Anglia.

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BOOKS

PHILOSOPHY

Renewal of interest

Butler by Terence Penelhum. Routledge & Kegan Paul, £18.95. ISBN 0 7102 0599 6

Joseph Butler, successively Bishop of Bristol and of Durham, is apparently little read or discussed today. Yet by the end of the 19th century he replaced Paley as the chief English apologist for Christianity. His *Analogy of Religion* (1726) was a standard textbook in most theological colleges and his *Fifteen Sermons* considered the best introduction to moral philosophy in our universities. A great Prime Minister, W. E. Gladstone, edited his works and he influenced most of the leading divines of the century, such as Newman and F. D. Maurice. Measured in terms of output Butler is of course a minor philosopher. Such was his influence however that editions of his works and commentaries on them streamed from the press in the last century. Discussions of his work have now almost all but dried up. Austin Duncan-Jones's excellent discussion of Butler's *Moral Philosophy* appeared in 1952 and Anders Jeffner discussed Butler's philosophy of religion in his *Butler and Home on Religion* (1960). Thereafter a handful of articles have appeared in the specialist journals. Given the meagre attention directed towards Butler's work in recent years, Professor

Penelhum is to be warmly congratulated on his excellent volume in the 'Arguments of the Philosophers' series, the first full length discussion of both Butler's ethics and his philosophy of religion to appear for many years. Moreover his careful and on the whole sound unravelling of Butler's philosophical arguments, and his critical appraisal of them, will do much to resurrect interest in the quality of Butler's philosophical contribution. The author's approach is to concentrate attention on Butler's philosophical arguments. Understandably, for that would have meant a much longer volume, he has deliberately excluded the historical dimension, that is, tracing the historical antecedents of Butler's views, and locating them in the intellectual climate of the 18th century. Perhaps his discussion suffers somewhat for the exclusion of this latter consideration. Since most recent discussions of Butler focus on his moral philosophy, Penelhum rightly devotes more space to rehabilitating his philosophy of religion, which he considers second only to Hume's, a claim which exaggerates Butler's contribution.

In moral philosophy Butler produced no systematic treatise, only occasional sermons, apart from the short *Dissertation on Virtue*. In these he deployed impressive arguments in defence of the proposition, echoing Stoic thought, that virtue is natural and vice unnatural. To this end he produced his well known analysis of human nature with its constituent elements of appetites, affections, and passions, together with the rational principles of self-love, benevolence, and conscience, whose dictates Butler equated with the voice of God. Arguably what is most valuable in Butler is his moral psychology – his analysis of particular passions such as pride and resentment – but Penelhum deliberately avoids discussion of his moral psychology in order to concentrate on



Bishop Butler

the familiar topics of the relation between benevolence and self-love on the one hand and the passions on the other, and between self-love and conscience. This he does extremely well and clearly. Nineteenth-century commentators saw Butler as a forerunner of Kant's moral philosophy. This, as Penelhum rightly emphasizes, is a travesty of Butler but Penelhum does not quite show why Butler is not a proto-Kantian but belongs, if anywhere, to the mainstream Aristotelian ethical tradition, together with injections of Platonic and Stoic elements.

By contrast with his moral philosophy, the *Analogy* is a systematic treatise in the philosophy of religion, designed deliberately as a piece of apologetic, aimed at the Deists and meant to justify philosophically Christianity's appeal to God's special revelation to men, as well as the essential institution of natural and essential religion – natural religion as the principal part of Christianity. What is "natural" religion? That which can be established by appeal to experience and reason concerning our relation to God, particularly God's moral commands for us. Natural religion has no place for the Fall, man's corrupt human nature and his need for divine grace and salvation. Ironically Butler, the great apologist, opened the way to liberal rational religion whose logical culmination ends in the stale logic of the modern "Myth of God Incarnate" school.

T. A. Roberts

T. A. Roberts is professor of philosophy at the University of Aberystwyth.

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The University of Birmingham is seeking a Lecturer in Theology. The successful candidate will be responsible for the teaching and research of the subject. The salary is £12,500 p.a. plus £1,500 for research. Applications should be sent to the Director of the Department of Theology, Birmingham University, 13, Museum Road, Birmingham B15 2TT.

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AND HEADSHIP
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Polytechnics

SUNDERLAND POLYTECHNIC
LECTURER II/SENIOR LECTURER
L11 - £8,076 - £11,958 Bar £12,945
SL - £11,958 - £14,046 Bar £15,045

Further appointments are available in the following areas:
FACULTY OF ENGINEERING
Department of Electrical, Electronic and Control Engineering
Software Engineering
Electronic Circuit Design
Digital Communications
VLSI and Microelectronic Systems
Applications invited, particularly from well-qualified persons with recent design or research experience. Successful applicants will be expected to teach on the Department's range of courses, contribute to course development work and participate in research/industrial professional collaborative activities.
Closing date: 8th March 1986.

FACULTY OF EDUCATION
Department of Teaching Studies
Business Studies Teacher Education (ref. A1)
Primary Education (Language & Reading with Religious Education) (ref. A2)
Primary Education (Mathematics & Science with Environmental Studies) (ref. A3)

Education Management (ref. A4)
In each case recent, relevant and substantial teaching experience is the appropriate level and in the appropriate subject is essential. Posts Ref A2 and Ref A3 experience in the Early Years will be an added recommendation.
Closing date: 28th February 1986.
Salary on appointment dependent on current salary and previous experience.
Apply, quoting relevant ref no where applicable, for application form and further details to Personnel Officer, Sunderland Polytechnic, Langham Tower, Ryhope Road, Sunderland SR2 7EE (Tel: 078 76231), ext 11.

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Polytechnics continued

RETAILING PROFESSIONALS

Preach what you've always practised from
the Chair in Retailing

ASDA-MFI Group plc are sponsoring the very first Chair in Retailing at Manchester Polytechnic. We therefore wish to appoint a Professor, someone with proven intellectual distinction and demonstrable practical retailing experience, to support the BA (Hons) Degree in Retail Marketing within the Department of Business Studies.

MANCHESTER
POLYTECHNIC

GROUP PLC

City of Birmingham
PolytechnicAssistant Director
(Academic and Resource
Planning)

(Vice Principal Grade 7)
£20,880 - £21,936

Applications are invited for the above new post.

Further details from:
Personnel Branch,
City of Birmingham Polytechnic,
17, Block, Perry Barr,
Birmingham B42 2SU.
Telephone: 021-358 9193,
extension 215216.
Closing date: 28th February, 1986.

DUNDEE COLLEGE OF TECHNOLOGY
SENIOR LECTURESHIP/LECTURESHIPS
IN THE DEPARTMENT OF ELECTRICAL
& ELECTRONIC ENGINEERING

Applications are invited from candidates who possess a good honours degree in electrical and/or electronic engineering or a related discipline, and preferably a higher degree. Applicants should have appropriate industrial and/or research experience in one or more of the following subject areas:
Senior Lectureship/Lectureship in Electronic Engineering (2 posts)
computer aided engineering
analogue electronics
communications
Lectureship in Electrical Engineering (1 post)
energy conversion
power electronics
power systems
The successful candidates will be required to teach on a range of postgraduate, degree and other courses and will be expected to undertake research and consultancy. At senior lecturership level the person appointed will be expected to play a leadership role, and candidates for this post must have substantial appropriate experience.

Salary scales (currently under review):
Lectureship £12,777 - £18,104
Lectureship £ 8,988 - £13,716
In all cases, initial placing will depend upon approved experience and financial assistance towards the cost of removal expenses may be payable.

Further particulars and application forms may be obtained from the Personnel Officer, Dundee College of Technology, Bell Street, Dundee DD1 1HQ, with whom applications should be lodged by 7 March 1986. Applicants should state for which post they wish to apply.

Middlesex Polytechnic
Middlesex Business School
Lecturer in Organisational
Behaviour

to £18,287 p.a. inc
to teach organisational behaviour and research methods on undergraduate and postgraduate courses within the School of Management and Administration. The ability to teach personal development, industrial relations and management development would be an advantage. A higher degree and management experience or a record of relevant consultancy and research are expected.

Applicants should have experience of leading the development of MBA, MA, and MPhil/PhD programmes. They should be able to demonstrate curriculum development and research achievement. A published record of research would be an added advantage.

Applicants must have academic qualifications in one of the main disciplines of management, but ability to teach in other areas of the Department's primary areas of Personal Development, Industrial Relations and Management Development would be particularly welcome.

Applicants should submit a curriculum vitae and a record of research and publications to the Personnel Officer, Middlesex Polytechnic, 114 Chase Side, London NW4 6PM. Closing date 24 February.

Leicester
Polytechnic

PROJECT MANAGER

Design management for Design funds

3 year DTI funded project.

Applicants should have experience of Design Management and educational experience, preferably in curriculum development and teaching materials.

Cybernetics from applications to £17,000 per annum.

Applications forms available from the Personnel Office, Leicester Polytechnic, PO Box 100, Leicester LE1 7RH. Tel: (0533) 351551 ext. 3303. Closing date: 21st February 1986.

Trent Polytechnic
Department of ComputingLECTURER II/
SENIOR LECTURER
IN COMPUTING
(TWO POSTS)

(£8,076 - £15,045 per annum)

Two challenging opportunities have arisen within the Department of Computing. Although expertise in Computer Architecture, Expert Systems or Systems Software is desirable, candidates with other relevant experience will also be considered. Successful candidates will be expected to play a leadership role in the Department.

Further details and forms of application are available from the Personnel Officer, Trent Polytechnic, Burton Street, Nottingham NG1 4BU. Closing date: 28 February 1986. Please quote Post Ref No. G00734.

Bristol Polytechnic
Department of ManagementASSOCIATE HEAD
OF DEPARTMENT

The Department of Management wishes to appoint an Associate Head to provide additional leadership to the Department's courses and curriculum development.

The Department's major courses include full-time Diploma in Marketing and Personnel Management (both CMAA) and Career Guidance, together with the part-time DMSA. A part-time course in Business Administration and it is hoped to introduce other mature level programmes in the future.

Applicants should have experience of leading the development of MBA, MA, and MPhil/PhD programmes. They should be able to demonstrate curriculum development and research achievement. A published record of research would be an added advantage.

Applicants must have academic qualifications in one of the main disciplines of management, but ability to teach in other areas of the Department's primary areas of Personal Development, Industrial Relations and Management Development would be particularly welcome.

Applicants should submit a curriculum vitae and a record of research and publications to the Personnel Officer, Bristol Polytechnic, 114 Chase Side, London NW4 6PM. Closing date 24 February.

Further particulars and application forms may be obtained from the Personnel Officer, Dundee College of Technology, Bell Street, Dundee DD1 1HQ, with whom applications should be lodged by 7 March 1986. Applicants should state for which post they wish to apply.

NAPIER COLLEGE
DEPARTMENT OF COMPUTER STUDIES
Lecturer 'A'
in Computer Studies

Salary £8,088 - £12,777 (Bar) - £13,716 (under review)
Applications are invited for vacancies in this large, well established department, which is responsible for the teaching of computing and advanced information technology courses at Degree, Postgraduate Diploma and Higher Diploma levels. Candidates should have up-to-date experience and be able to teach in at least one of the main areas of computing, such as programming and software development, systems design, data base systems, computer graphics and other interactive techniques, distributed systems and networks, or knowledge based systems.
The department has an expanding research and consultancy programme, to which successful applicants will be encouraged to contribute. Candidates should have good academic qualifications in a subject relevant to computing. Experience in industry or commerce would be an advantage.
Suitable applicants can be appointed to permanent posts on less than a full-time basis, the salary being pro rata.
Application form and further particulars from:
Administrative Officer (Personnel), Napier College,
219 Colinton Road, EDINBURGH EH14 1DJ
Telephone No. 031-447 7070 Ext 4274
CLOSING DATE: 28 February 1986.

Colleges and Institutes of Technology

DURHAM COUNTY COUNCIL
EDUCATION DEPARTMENT
DARLINGTON COLLEGE OF TECHNOLOGY
VICE-PRINCIPAL

Applications are invited for the post of Vice-Principal of the above College (Group 6) which becomes vacant from 1st September, 1986.
This is a vital post in the College management structure and the college is seeking someone with energy and enthusiasm who has had experience in industry/commerce and teaching. The post-holder needs to be familiar with recent developments in Further Education and be able to actively contribute to the developments of the College.

Further details and applications forms available from the Director of Education, Education Department, County Hall, Durham. DH1 5UJ, to be returned by Friday, 7th March, 1986.

General Vacancies

Central Bureau for Educational Visits and Exchanges

Appointment of
Director
£19,283 - £25,505

The Board of Trustees invites applications for the appointment of a Director of the Central Bureau. Suggestions on persons suitable for consideration would also be welcome. The Director, working to the Trustees, contributes to the formulation of policy and as the Bureau's Chief Executive and Chief Financial Officer is responsible for the efficient administration, management and financial control of all Bureau functions.

